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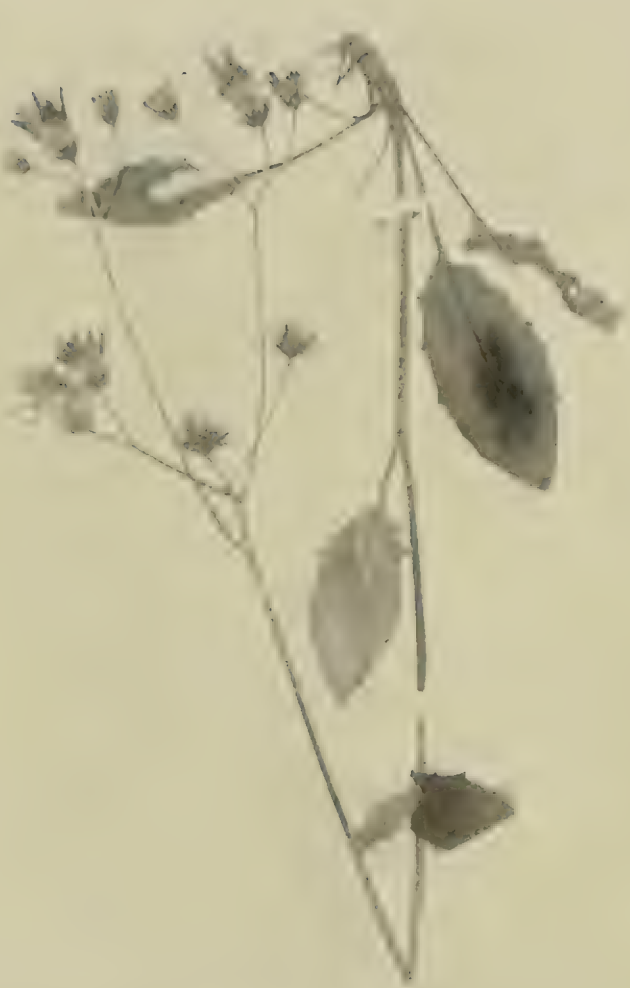

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†Watts, Col. G. (1927).
†Webb, J. Arthur, B.A.
Webster, Alfred.
†Webster, Canon G. R. Bullock-.
Webster, Rev. John (1927).
†Wedgwood, Mrs.
†Weiss, Prof. F. C., F.R.S.
†Weyer, Major Bates van de.
†Weyer, William van de.
Wheldon, J. A., M.Sc.
Whitbread, Mrs.
†White, J. Walter, F.L.S.
Whymper, Lieut. R., F.L.S.
Whyte, J. S.
Wilkinson, J. G.
*Wilkinson, Mrs Agatha.
Willan, Mrs Hugh.
Williams & Norgate.
†Williams, Miss Ethel.
Williams, Miss Lavender.
Williams, T. A.
†Williamson, R. H.
Willmott, Miss E., F.L.S.
*†Wilson, A., F.L.S.
Winchester Coll. Nat. Hist. Soc.
Wise, W.
*†Wolley-Dod, Lieut.-Col. A. H.
†Wood, Hon. Mrs Evelyn.
Woodhead, Prof. T. W., Ph.D.
Wright, F. R. Elliston (1927).

†Yapp, Prof. R. Y.
†Yeldham, Mrs (1927).
Young, F. S., M.A.
†Young, Miss Gertrude.

THE
BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD.

FOR 1926.

BALANCE-SHEET FOR 1925.

Subscriptions received,	£241	1	0	Printing Reports, &c.,	£176	10	0
Sales of Reports and Advertisements,	17	4	5	Expenses of Distribution,	3	18	9
Balance from 1924,	30	14	5	Postages, Carriages, Stationery, &c.,	28	13	0
				Towards List,	50	0	0
				Balance,	29	18	1
	£288	19	10		£288	19	10

Balance carried forward, £29 18s 1d. Life Members' Fund, £82 8s.

All subscriptions should be paid to the above address on the first of January each year, or to the account of G. C. Druce in the Westminster Bank, Oxford. Payment in advance for two or more years saves trouble and expense. Ordinary Members, 10/-; Exchange Members, 12/6; Entrance Fee for New Members, 5/-.

Strong pressure has been made to bring out interim reports, but for the present such a plan is impracticable.

Thanks are accorded to Mr H. Downes, M.B., F.L.S., F.G.S., for promptly distributing the parcels to the Exchange Members, containing, as they did, 4457 specimens, and for editing the *Report* in so useful a manner.

We are greatly indebted to Mrs Wedgwood for a generous present to the Benevolent Fund, and also to Mr C. E. Britton and Mr A. H. Evans for donations.

The year 1926 has not been very brilliant in discoveries. Mr C. E. Salmon has described a new species of *Myosotis* as *brevifolia* from the north of England and the south of Scotland and has had a species of *Alchemilla* as *Salmoniana* named after him by Dr Jaquet. It was gathered in Cumberland. Mr and Mrs Corstorphine gathered *A. coriacea* in Forfarshire, and I have also a new species, *A. colorata*, from Belfast. There are three new Taraxaca, all found in Oxfordshire, but not confined to that county since I got *britannicum* near Tenby, *sublutescens* in W. Ross, and *alienum* in several counties. Several other Dandelion species, hitherto unrecorded for Britain, have been found. Dr Dahlstedt has named about 10 from the Orkneys gathered by Colonel H. H. Johnston. He has also named two new species of hawkweeds, one found by me in Sussex and the other in Forfarshire, but their distinctness has been challenged. Dr Drabble has named two new species of *Viola—anglica* and *latifolia* and an *Erophila—oedocarpa*. Two new species of *Thymus* have been detected by Dr Ronniger among specimens in the National Herbarium. The very rare *Epipogon* again appeared in our Oxfordshire wood and two specimens, both very small, were seen by me. Our energetic workers, Messrs R. Smith and R. Melville, have added many aliens to our List.

The publications on botanical subjects during the year are for the most part reviewed in the subsequent pages of this *Report*, but we must single out for special notice the sixth supplement of the "Index Kewensis," published by the Clarendon Press, and prepared by its Editor with meticulous care; Miss Arber's "Monocotyledons;" Dr Rendle's "Dicotyledons," issued by the Cambridge Press, and Mr Hutchinson's "Families of Flowering Plants," all important additions to the literature on classification. "The Flora of Buckinghamshire" by the Secretary completes the Flora of the Upper Thames province. Its preparation has taken nearly half a century. The year also witnessed the appearance in "The Victoria County History" of my Botany of Huntingdonshire. We are very glad to see that under able editorship *The North Western Naturalist* is making excellent headway. The Wild Flower Society, with Mrs Dent and her energetic helpers, continues to bring in new adherents to Field Botany, and the *Irish Naturalist* is now published bi-monthly in Belfast.

We are greatly indebted to Dr S. H. Vines, Rev. F. Bennett, Mr T. Gambier Parry, Mr R. H. Corstorphine, Mr W. H. Pearsall, Rev. H. J. Riddlesdell, Mr R. Butcher, Mr W. O. Howarth, Col. A. H. Wolley-Dod, Mr J. Fraser, Dr Drabble, Mr D. Lumb, Mr A. Bennett, and Mr A. E. Wade for their literary and critical assistance, and also to the authorities of the Royal Botanic Gardens, Kew; the Botanic Gardens, Edinburgh, and the Natural History Museum at Cromwell Road. Many excellent foreign botanists have rendered help in naming critical species. Dr Albert Thellung, whose splendid book on the Umbelliferae is noticed elsewhere has named the Aliens; Dr C. Lindman, the Poas; Dr E. Almquist, the Capsellas; Dr H. Dahlstedt, the Dandelions; Dr R. Danser, the Polygonaceae; Dr Karl Ronniger, the Thymes; M. Paul de Riencourt, the Leguminosae, and Dr J. Murr, the Chenopodiaceae. Prof. C. H. Ostenfeld and Prof. J. Holmboe have also given assistance.

We beg to offer sincerest congratulations to our member, Emeritus-Professor W. Somerville on the K.B.E. conferred on him. We are rejoiced to see he is recovering from his long illness. We notice with pleasure that Lord Lambourne has been presented with his portrait, painted by W. de Glehn, A.R.A., by the members of the Royal Horticultural Society to hang in the great hall of their new building at Westminster; that Prof. F. E. Weiss has been elected a Corresponding Member of the Société Botanique de Genève, and that Dr Dukinfield Scott has been awarded the Darwin Medal of the Royal Society for his contributions to palaeophytology.

A well deserved honour has been bestowed by the conferring of a Knighthood on Prof. J. Bretland Farmer, F.R.S. There is a portrait and an account of him in *The Gardeners' Chronicle*, of which he was once editor. He has been long associated with the Imperial College of Science and Technology at South Kensington. Capt. A. W. Hill, Director of Kew, was made C.M.G. in the King's Birthday honours, and Prof. Francis Oliver was given the Hon. LL.D. by the University of Aberdeen.

The new members include:—Sir W. M. Abbot Anderson, Bart. (1927); Mr J. Y. Ainsworth; Miss E. L. Baumgartner; Prof. F. S. Beatty; Mr C. Bellamy; Mr J. H. Bowman (1927); Mr Horace J. Bradley, J.P.; Mr A. E. Bradshaw; Prof. Major K. W. Braid; Mr F. R. Browning; Mrs Burdon (1927); Dr Campbell; Major-General Cator, C.B., D.S.O.; Mr W. Feaver Clarke, J.P.; Mr A. Cobb; Miss Alice Cole; Mr J. Gordon Dalgleish; Mrs R. Davies (1927); Miss Ethel Edgar; Mr Johnston Edwards, Mrs A. B. Gillett; Mrs M. Hall (1927); Rev. D. M. Heath (1927); Sir A. Hort, Bart.; Mr J. W. Long; Mr J. E. Lousley; The Hon. Mrs Manners; Rev. W. Keble Martin; Mr Ashley Maude, F.L.S.; Mr S. P. Mercer (1927); Lieut. S. K. Mukerji, M.Sc., F.L.S.; The Bot. Dept., University, Oslo; Miss O. B. Owen; Pekin Metropolitan Library; Captain A. H. Batten Pool; Mr Granville Proby; Miss Rusher; Miss H. M. Salmon (1927); Miss N. Smith; Mr H. D. Stanley; Major-General F. C. Stern, O.B.E., M.C.; Mrs M. E. Stewart; Miss C. Stevens; Mr J. Sutherland (1927); Mr Eric Taverner; Mrs Theobald (1927); Mr C. A. Thorold; Mr A. Turner; Colonel G. Watts; Rev. John Webster (1927); Mr F. R. Elliston Wright (1927), and Mrs Yeldham.

We have been deprived of many valued members by death. The botanical world has lost Prof. W. Bateson and Dr Guppy, most able scientists, and in the death of Sir George Holford, horticulture has been deprived of one of its most brilliant devotees, our Society of a most kindly supporter, and myself of one of my kindest friends. It will be remembered that he allowed us to meet at Dorchester House, his palatial mansion, in 1926. Prince Frederic Duleep Singh, who entertained some of us on our Botanical visit to Norfolk in 1925 and showed us *Liparis* on his estate, died all too young, and his county has been robbed of a loyal helper in archæological and historical investigation. The ranks of English Field workers have been broken by the death of John Cryer, an old Editor and Distributor of the Exchange Club, to whom British Botanists were indebted for his identification of Hieracia. On those of Yorkshire he was an acknowledged authority. We have also lost Prof. R. W. Phillips of Bangor, a worker at the Algae, and Dr Drinkwater, a clever delineator of British Plants and an able worker at Genetics. Many of his paintings enliven the National Museum of Wales at Cardiff. The Society has lost in Emeritus-Professor E. Hackel of Attersea one of its most able experts and one who for many years was a tower of strength in assisting to name the Graminaceae, of which he was the acknowledged authority.

The weather was not particularly genial during the year, Scotland excepted, but the magnificent display of blossom on the Pear, Cherry, Plum, and Apple was remarkable. The yield, however, was not proportionate, a cold frosty night causing great damage throughout a large area of England. Scotland was an exception for nearly the whole of July was signalised by almost unbroken sunshine. Little rain fell even on the west coast, so that actually a shortage of water was experienced at Gairloch! This sunshine caused a copious flowering of Hieracia but the more delicate plants were soon over and grasses quickly dried up.

My earliest excursion was a motor run with Mrs Wedgwood to Tenby for the purpose of seeing *Limonium transwallianum*. It appears to be a well marked form. The journey down was rendered very pleasant by the extraordinary abundance of Pear and Plum blossom. On the sand dunes between Tenby and Penally two new Dandelions were found, each of them having been previously seen in Oxford, *i.e.*, *britannicum* and *alienum*. Our valued member, Mr Arnott, showed us the Tenby daffodil, both the single and double-flowering plants. *Hutchinsia* was in flower and a distinct looking form of *Viola canina* grew on the dunes. We saw young plants of *Centaurium scilloides* at Newport. Near Swansea on the sand dunes there was a great display of Taraxaca. At Kenfig one noticed that the Pool was changing its position, the water being pushed landwards by the encroachment of the sand on the leeward side. Byfleet was next visited with Lady Davy, where *Moenchia* was in good show on April 15th. On the 22nd, with General and Miss Cator, *Muscari* was seen in fine bloom near Ditchley. In May we found plenty of *Taraxacum faroense* in Berkshire, and on the 27th of that month saw two specimens of *Epipogon* in Oxfordshire, also *Euphorbia virgata*, *Bunias orientalis* near Henley, and *Ornithogalum umbellatum* seemingly native at Bix. On June 6th, *Orchis Simia* was in good flower, but the locality has become known to the Reading students who will, it is hoped, preserve it from the great risk of its extinction. On the 13th June some of us met under the genial hospitality of the Earl and Countess Buxton and worked Boxhill where *Ajuga Chamaepitys*, *Aceras* and *Herminium* were seen. In Ashdown Forest we got a Hawkweed which Dr Dahlstedt has named a new species, *H. megapodium*. On the 17th Richmond Park was visited in order to see the narrow-leaved form of *Carex divisa* to which we were directed by Mr Fraser. It is not the true *stenophylla*. Another party met on June 26th at Miss Grenfell's and motored to Lyndhurst where most of the New Forest rarities were seen, including several specimens of Gladiolus. July was spent in motoring to Scotland. The atrocious weather prevented any work being done on the way except to gather *Trifolium ochroleucon* at Alconbury in

Hunts. Our second night was spent at Durham, the third in Edinburgh, and the fourth in Arbroath. We gathered *Valeriana pyrenaica* in splendid flower south of Perth. We had a long day and a thorough drenching on the sands of Barry, vainly trying to show Mr Gambier Parry the Coral Root, but accompanied by Mr Corstorphine on a second day we saw a couple of specimens in fruit in a place where normally there are thousands. *Orchis incarnata*, var. *dunensis* Dr. was nearly over blossom. The usual plants were seen at Forfar and Restennet. We had a long day in Corrie Phee where *Carex Grahami* was in good condition. One doubts its being a hybrid. Neither of its putative parents is in the neighbourhood. We then motored over the Cairn o' Mount (1489 feet altitude) to Aboyne. On a glorious day a fine sight was to be seen in an orange-reddish ribbon by the burnside leading to Clatterin' Brig. It was caused by a luxuriant growth of a variety of *Mimulus guttatus*. With it was *Meconopsis cambrica*. The burn is in Kincardineshire. Shortly before reaching Banchory we found plenty of *Listera cordata* and *Goodyera*. That first-class hotel, the Tor-na-Coile, was made our headquarters and from there we diligently searched for nearly a week for *Botrychium matricariifolium*, but in vain. We found *Orchis maculata* × *Habenaria Gymnadenia*, *Orchis praetermissa*, var. *pulchella*, *O. purpurella*, *Teesdalea*, *Polygala dubia*, *Campanula persicifolia* and other aliens. We then motored by Alford, Huntly, Elgin and Forres to the Culbin Sands. Here *Goodyera* and *Pyrola minor* were seen, and *Orchis purpurella* and *praetermissa*, but past their best. There was no sign of *Corallorrhiza*. The Sands are well worth a visit owing to their extent and beauty. Their vegetation has been well described by Mr Stewart and Mr Patton in our 1923 *Report*. We then went on through Inverness, Beauly and Strathpeffer to Strathcarron. The strenuous work for a fortnight in W. Ross will be detailed in the Flora of W. Ross. We got home in time for a busy week at the British Association annual meeting. The Presidential address in the Sheldonian was a brilliant function. The Prince of Wales was clearly heard not only in the Sheldonian but in the Town Hall, and he had doubtless, owing to wireless, the largest audience ever experienced by the President of the B.A. Lord Balfour proposed the vote of thanks in a speech of some length. It brought back the memory of the last meeting when Lord Salisbury (Lord Balfour's uncle) was President, and when Huxley proposed the vote of thanks. One may say that, as Vice-President, I had the honour to preside at the popular lecture by Julian Huxley in the Town Hall the same week. Section K. was well attended under the Presidency of Prof. Bower. A glorious day was granted for the large Botanical excursion over the Berkshire Chalk Downs and Greenham Commons to Pangbourne and Abingdon. A Sunday afternoon was spent in Bagley Wood. The rest of August was spent in the Dauphiny, going from Paris to Grenoble, then motoring to Le Lautaret, the Col du Galibier, St Jean de Maurienne where there is a quantity of *Epipogon*, Chamounix and Geneva. There we met M. Buser, who had kept my Alchemillas sent him in 1892. He told me they included the first British specimens of *A. pubescens* he had seen. His hearing was very defective and his eye-sight has now gone so he was unable to return my specimens. It is unfortunate as there were many gatherings including probably other new forms. We also met Dr Beauverd who showed us over the Geneva Herbarium. It includes Bouvier's plants described in the "Flore des Alpes." The roof is flat and shingle-strewn, where grow a considerable number of Sempervivums and their hybrids. The blue-winged Algerian grasshopper has made itself quite at home there. From Paris we flew back to England, passing over the dunes near Le Touquet where *Scorzonera humilis* grows, and seeing 3000 feet below the freshwater ponds in the Dungeness shingle. They looked like black patches, but when the sun was reflected in them they appeared like silver shields, while the military canal and the streams were like silver threads. It reminded one of that wonderful mosaic map of France in the Louvre which was given by the Czar, where the roads are of platinum, Paris a diamond, and the departments of various special stones. We reached Croydon in a little more than two hours after a delightful passage. In September I was the guest of Sir Roger Curtis and Lady Brady in Staffordshire. We made a raid upon the waste places and railway-sidings at Burton-on-Trent for aliens finding about eighty species, some of them quite interesting. Most of them are included under New County Records. They include *Lathyrus tuberosus*, *Herniaria hirsuta* and *Lotus angustissimus*. These come in with foreign barley used in the adjacent maltings. We also explored Dovedale. On the limestone hill near Blore we found *Cotoneaster microphylla* among the grass. There too were some good Roses—one of them a form of *R. glauca*, mimicking *R. mollis*, a most handsome plant well deserving a name. It showed no sign of hybridity. We then went on to the Earl of Dartmouth's at Patshull and to Lord Boyne's at Burwalton, Salop, adding some new records. On the 18th I motored to the New Forest in order to see *Senecio erraticus* which Mr Trapnell found there some years ago. It was in some quantity growing with *S. aquaticus* and *S. Jacobaea* and varied considerably. I then went north to Fallodon for a visit to Lord and Lady Grey. The flowers were mostly over but a few records were made.

The visit to the Dauphiny is the subject of a special article.

Grateful thanks are offered to all helpers.

NOTES FOR COLLECTORS AND DISTRIBUTORS.

Colonel Wolley-Dod has made some suggestions both for those who collect plants and for those who act as distributors. Many of these are already acted on, but I would draw attention to the following, which he has drawn up.

COLLECTORS.

Every gathering should have a reference number and two different plants should not be under the same number.

Vice-County numbers are unnecessary when one says, for example, N. Essex or S. Essex. Their use alone without county names is worrying.

Mounting sheets should be uniform and should not exceed 18 in. by 11 in.

Very large labels should be avoided—they take up too much room on a mounted sheet.

Fugitive ink should never be used.

If a plant is sent in as a forma, some statement of its difference from the type should be added.

Packets of seeds should have an easily detachable label.

DISTRIBUTORS.

Distributors are asked to use a separate paragraph for each plant sent in and the critics' remarks should be added to the note. Sometimes these have been put at the end of a paragraph on plants of various gatherings, and it is not easy or possible to say to which the remarks refer.

All specimens should be stamped with the Club's stamp, and the stamp itself should be dated.

Long-winded remarks should be avoided. Criticisms should be on the plant itself. Other information is often most interesting and might well find place in the Secretary's own Report. They seem out of place in the Distributor's Report and tend to obscure the really technical points of importance.

If Lond. Cat. Nos. are used on the labels, the edition of the Cat. should be given.

PLANT NOTES, ETC., FOR 1926.

(Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.)

ABBREVIATIONS.—† before a name signifies the plant is not native; × a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts; Gard. Chron.* = *Gardeners' Chronicle; Ir. Nat.* = *Irish Naturalist; Journ. Bot.* or *J. of B.* = *Journal of Botany; Nat.* = *The Naturalist.*

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9. ANEMONE NEMOROSA L., var. CAERULEA DC. *Gard. Chron.* i., 151, 1926. It occurs in Wales, not in woodlands but in vast numbers on many a breezy, treeless, upland sheep-walk, especially, it would seem, in the slate producing districts. Last year I came across some fields and a railway-cutting which were literally blued by these pretty flowers. On closer examination, however, I noted that here again there was a wide variation in the colour—whites, then pinky lilacs, and both pale and lavender blues. The blue ones flower a good deal later than the rest.

21. RANUNCULUS AURICOMUS L., var. INCISIFOLIUS Reichb. Calow, Derbyshire. Lower leaves very deeply divided, upper leaves with broad, coarsely and irregularly toothed segments. It may be worth mentioning that the reniform lower leaves and narrow segments of the upper leaves of the common form may have a distinct downy coat (Southall, Middlesex; Hasland, Derbyshire.) Hayward's Pocket Book, Ed. 17, 1922, states that the radical leaves are glabrous. E. DRABBLE.

22. R. BULBOSUS L. Finchley, Middlesex, May 1913. Flowers apetalous but long stalked (unlike Mr St John Marriott's plants from Dartford Heath, *Rep. B.E.C.* 431, 1924); fruits fully formed; habit of plant normal. E. DRABBLE.

24. R. FLAMMULA L. It is worthy of notice that this species, like *R. Lingua*, may have the leaves glabrous or hairy and this is true for both the entire leaved and serrate leaved (var. *serratus* DC.) forms. The amount of hairiness varies greatly, and different leaves on the same plant may have glabrous or a hairy epidermis. I have plants with quite glabrous leaves from Wingerworth, Derbyshire; Colne, Lancashire; Mitcham Common and Ockham, Surrey; Sychnant Pass, Carnarvon-

shire, and Ullswater, Cumberland. Plants with more or less hairy leaves I have gathered at Calow, Derbyshire; Flitwick, Bedfordshire; Grange Hill, Essex; Wimbledon Common, Surrey; Lizard, Cornwall; Sychnant Pass, Carnarvonshire, and Ullswater, Cumberland. E. DRABBLE.

28. R. SARDOUS Cr. Freshwater, Isle of Wight, 1924. See *Rep. B.E.C.* 431, 1924. The suggestion of hybridity was quite tentative and was not meant for publication. The plant was prostrate without an upright main stem, and covered an area about 20 inches in diameter. The leaves and stems were slightly hairy and the flowers large (4-5ths in.). The carpels, which grew to the normal size, all dried up and withered without forming a single fertile fruit. Tuberculation of the carpels was scanty, but distinct in dried specimens. I have gathered a small prostrate plant at Filey, Yorkshire, but the plant now under consideration is quite different, and unlike anything else that I have seen. Unfortunately all attempts to keep it growing through the winter failed. It may here be mentioned that the hairiness of *sardous* varies greatly. I have plants with stems and petioles almost glabrous whilst others are densely clothed with long and shaggy hairs. Both were gathered in Swanscombe Marshes, Kent. E. DRABBLE.

28. R. SARDOUS Cr., var. TUBERCULATUS Celak. Lewes, Sussex, J. W. WOODS in *South Lond. Bot. Inst. Herb.* C. E. BRITTON in *Journ. Bot.* 324, 1926. Plants in my herbarium from Newhaven, Sussex, 1909; Woking, Surrey, 1909, and from Cardigan, Dr Clarke, show the character. My Chichester plants, like all the adventives, belong to the type which has one row only of tubercles. One may add that the sub-species *trilobus* Desf., of which I have specimens from Kelso, *Brotherston*, and Mildenhall [335], *W. C. Barton*, shows the tubercles over the whole face as in the var. *tuberculatus* Celak., and that the small form, *parvulus* L., as represented in my herbarium, has the tubercles in one row only.

30. R. SCELERATUS L., var. PUBESCENS R. & F. Fl. Fr. i., 112. An unusually hairy plant of *sceleratus* was sent to me by Mr J. M. Brown, B.Sc., from Kiveton Park, S. Yorkshire. Hooker, *Student's Flora*, Ed. 3, says "leaves glabrous;" Babington, *Manual*, Ed. 9, says that the lower leaves are glabrous. The only really glabrous plant that I have noticed is one from near Exeter. Plants from Staveley, Derbyshire; West Kirkby, Cheshire, and Grange Hill, Essex, have stems and leaves more or less hairy, though the pubescence appears to wear off the older leaves to a greater or less extent. E. DRABBLE. In *Fl. Berks* 17, 1897, I said that *sceleratus* was usually glabrous especially as regards the lower leaves, but that a small-flowered plant which grew near Loddon Bridge had the lower leaves pubescent (forma *pubescens* Corb. in Magnier Scrinia, 1893). A large series in my herbarium fails to show an entirely glabrous plant. The majority show the lower leaves glabrous or with a few hairs only, the upper part of the stem, upper leaves and sepals

usually pubescent. The var. *pubescens* I have from Jersey (Samaris), Berks, Oxon, &c. My non-glabrous plants are from Beaconsfield, Bucks, and Skinburness, Cumberland, but even these show scattered hairs on the upper part of the stem. Rouy & Foucaud describe it as " presque glabre ou pubescente." Syme (*Eng. Bot.* i., 31), as usual, excellently describes our plant which looks, in the plate, more glabrous than it is. In the original *E.B.* plate, 2833, the hairs are shown on the stems, &c., but owing to the wearing of the copperplate, the fig. 27 in the third edition scarcely shows them.

52 (2). HELLEBORUS ORIENTALIS Lam. Enc. iii., 96, forma. Alien. Thrace, Macedonia, Turkey. Sent from a wood near Steventon, N. Hampshire, ex Mrs YELDHAM. This species differs from *H. niger* in its sepals being broader and much imbricated. Of course there it is an introduced species. The sepals are suffused with pale pink colouring. R. W. Butcher got it in Bramdean wood, but it was originally dumped there from a garden. G. C. DRUCE.

163. EROPHILA OEDOCARPA Drabble in Journ. Bot. 45, 1926. Ashover, Derbyshire; Wallasey, Cheshire. It has terete fruits 3-4 mm. long by 2.25-2.5 mm. broad. A smaller plant than the Ben Lawers *inflata*.

303. BRITISH PANSIES. In *Journ. Bot.* 263, 1926, Dr E. Drabble writes on British Pansies of the " arvensis " section. There are descriptions of ten species as follows: *agrestis* Jord., *segetalis* Jord., *obtusifolia* Jord., *ruralis* Boreau, *Déséglisei* Jord., *subtilis* Jord., *arvatica* Jord., *derelicta* Jord., and two new species, *V. latifolia* allied to *obtusifolia* and *V. anglica* allied to *Déséglisei*. This is only the first part of the paper and no artificial key is given. A further instalment (the " tricolor " section) has recently appeared in Vol. lxv. of the same Journal.

304. VIOLA ANGLICA Drabble in Journ. Bot. 269, 1926. Cultivated ground on the downs, St Margaret's Bay, E. Kent.

304. V. LATIFOLIA Drabble, *l.c.* 266.

430. HYPERICUM MONTANUM L., var. TYPICUM Beck, with leaves glabrous, and var. SCABRUM Koch, with leaves scurfy on the underside. See C. E. BRITTON in *Journ. Bot.* 325, 1926. Probably the glabrous plant from Abinger, C. E. SALMON in *Herb. Brit. Mus.* and my specimen from Lambridge Wood, Oxon, belong here. The var. *scabrum* is, as Mr Britton says, the common British plant, but the clothing varies much in quantity. Specimens from Marlow and Burnham Beeches, Bucks; Park Place, Berks; and Effingham, Surrey, are but very slightly scurfy. Obviously this is less shown in shade-grown specimens.

488. GERANIUM ROBERTIANUM L., forma. Purley, Berks. Sent by C. E. HODGKIN, who says there was only one large plant. The stem is much thicker than usual, the plant more succulent and, although the

first few flowers were very rosy with no white, as in the ordinary form, the petals daily became more like the type. The leaves are quite extraordinary, resembling those of *Chaerofolium sylvestre* (L.), var. *latisectum* Dr. It will be interesting to observe its behaviour under cultivation. Mr H. BRITTEN forwarded a form the extreme opposite of the above, as the leaf is divided into very narrow, straight segments. It came from Boston Spa, Yorks.

488. G. ROBERTIANUM L. Plants with petals distinctly 3-lobed at the tip are not uncommon at Freshwater, Isle of Wight, E. DRABBLE.

488. G. ROBERTIANUM L., var. ALBUM. See *Gard. Chron.* i., 188, 1926, where Mr A. T. JOHNSON mentions a variety differing from ordinary white-flower *Robertianum* in being of a fresh, pale, grassy green colour in leaf and stem and in having a dead white corolla. It came from Sir Charles Isham's garden at Menai Bridge, to which most of the plants were brought from western Ireland. Possibly this is a white-flowered form of Ostenfeld's *G. celticum.*

509 (3). OXALIS LATIFOLIA H.B.K. Nov. Gen. v., 237, t. 167. Alien, Mexico. Hortal. In a field, Bellozone Valley, Jersey, L. ARSENE.

517. EUONYMUS EUROPAEUS L., var. LEUCOCARPUS DC. Prod. ii., 4. Near Colwall, Hereford, F. M. DAY.

529 (2). LUPINUS HIRSUTUS L. Alien, Medit. Splott, Glamorgan, R. L. SMITH.

544. ONONIS SPINOSA L., var. PROCURRENS (Wallr.). Llandrillo-yn-Rhos, Denbighshire, July 15, 1925 [2799], C. E. BRITTON. Det. PAUL DE RIENCOURT.

562. MEDICAGO FALCATA L., var. DIFFUSA Schur Enum. Pl. Trans. 151. Tiges diffuses, grêles, allongées, à rameaux courts subunilatéraux; folioles petites; fleurs d'un jaune doré, en grappes courtes pauciflores. Gravel pit, Crayford, Kent [2340], G. C. BROWN.

573. M. LITTORALIS Rhode, var. LONGISETA Rouy Fl. Fr. v., 30. (= *M. littoralis*, race *cylindracea* (DC.), var. *longiseta* Rouy.) Selkirk, 1926, G. C. DRUCE & Miss I. M. HAYWARD. Det. PAUL DE RIENCOURT.

579. M. HISPIDA Gaertn., var. TEREBELLUM (Willd.). (= *M. pentacycla* DC., var. *breviaculeata* Rouy). Splott, Glamorgan, Miss VACHELL. Det. PAUL DE RIENCOURT.

579 (2). M. PENTACYCLA DC., var. LONGIACULEATA Rouy. Barry, Glamorgan, 1925, G. C. DRUCE.

580. M. ARABICA Huds., var. LONGISPINA Rouy Fl. Fr. v., 35. Epines subulées, très arquées, égalant environ la largeur du légume.

Penzance, Cornwall, Bailey in *Hb. Druce*, as *denticulata*; Aberdour, Fife, Bell in *Hb. Druce*. Det. Paul de Riencourt.

597. Melilotus indica All., var. Tommasinii Rouy, modif. septentrionalis Riencourt. Burton-on-Trent, Staffs, 1926. G. C. Druce.

598. Trifolium medium L., modif. pedunculatum (Ser.). Tweedside, Dryburgh, Roxburgh, C. Bailey; Gimingham, W. Norfolk, A. R. Horwood in *Hb. Druce*. Det. Paul de Riencourt.

599. T. pratense L., var. parviflorum Bab. Freshwater, Isle of Wight; Wallasey, Cheshire, E. Drabble; Falmouth, Cornwall, Major Orme; [Ref. No. 2334] Buckwater, Weymouth, Dorset, ex G. C. Brown, is var. *heterophyllum* (Rouy under *T. brachyanthum* Rouy). This has the habit of *T. pratense*, var. *heterophyllum* L. & C. In this place [Ref. No. 2335] it verged towards type *pratense*.

611. T. arvense L. (agrestinum Jord.), var. littorale (Jord.) = perpusillum Ser. Littlestone, Kent, Miss E. Armitage.

611 (2). T. gracile Thuill. Loddon Briage, Berks; Llanberris, Carnarvon, G. C. Druce, as *T. arvense*, var. *strictius* Koch. These are now identified by Mr Paul de Riencourt as Thuillier's plant which is treated as one of the four " formes " into which Rouy (*Fl. Fr.* v., 164) divides *T. arvense*. It is a less hairy plant with shorter ciliate teeth than the other three forms.

627. T. hybridum L. (fistulosum), modif. prostratum Riencourt. Limpsfield, Surrey, H. E. Fox.

641. Anthyllis Vulneraria L., var. maritima Koch, modif. polyphylloides Riencourt. Isle of Wight, G. C. Druce.

646. Lotus uliginosus Schk., modif. decurtatus (Peterm.). Mellon Charles and Little Sands, W. Ross, G. C. Druce. Melmerby, Cumberland, Rev. W. W. Mason. Det., as sub-modif. transiens, Paul de Riencourt.

648. L. tenuis Kit., modif. crassifolius. Beaconsfield, Bucks, Mrs Wedgwood. Det. Paul de Riencourt.

648. L. tenuis Kit., var. sabulicola Rouy, modif. grandiflorus Riencourt. Kettering, Northants, G. C. Druce.

650. L. angustissimus L., forma aberrans Riencourt. Burton-on-Trent, Staffs, G. C. Druce. Det. Paul de Riencourt.

650 (1). L. conimbricensis Brot. Alien, Medit. Splott, Glamorgan, R. L. Smith.

[654. ASTRAGALUS ALPINUS L. Caithness, Mr MANSON, ex J. A. WEBB. Confirmation needed.]

669. ORNITHOPUS PERPUSILLUS L., var. GLABER Corb. Fl. Normandie 169. Lancresse quarries, Guernsey. Collected by J. E. LOUSLEY. It is a rare form as I have it only from Farley Hill, Berks, 1892, and Malvern, Worcester, in my large set from Britain. The legumes and leaves are practically glabrous. G. C. DRUCE.

681. VICIA VILLOSA Roth, var. GODRONI (Rouy Fl. Fr. v., 237, as a Race). In an old pasture field near Kilbryde, Corbridge-on-Tyne, Northumberland, R. B. COOKE.

698. V. ANGUSTIFOLIA (L.) Reich., var. NIGRA (L.). Blackhead, Kent, *Hb. N. B. Ward.* Det. PAUL DE RIENCOURT.

698. V. ANGUSTIFOLIA (L.), var. LUGANENSIS (DC.). See Gaudin *Fl. Helv.* iv., 512, as *V. sativa luganensis*. Glabriuscula, foliis sub-septemingis, foliolis elongatis, truncato-retusis, mucronatis; summis acutiusculis (tantum obtusis vel acutiusculis). Frilford, Berks, 1926 [DD741]. In the Berkshire plants the leaflets are obtuse mucronate and the flowers are 2-3 in number, modif. *racemosa* (Beck.). G. C. DRUCE. Det. PAUL DE RIENCOURT.

700. V. LATHYROIDES L., var. CIRRHIFERA P. de Riencourt (as *V. Lathyroides*, var. *parva*, nov. sub-var. *cirrhifera* P. de Riencourt). Field near the sea, West Rounton, E. Norfolk, E. WATKIN in *Hb. Druce.*

909. ALCHEMILLA PUBESCENS Lam. In 1892 I sent many Alchemillas to M. Buser, of Geneva, for identification. These have been mislaid by M. Buser, so that I have never had them back. This year I called upon the veteran botanist, and found that he had lost his eyesight and was very deaf. He told me that my specimens had been determined by him, but that they were lost in his collection, and it was impossible now for him to find them. He distinctly remembered that *A. pubescens* from Britain was among them, and that it was the first British specimen he had seen, but unfortunately its distinct habitat he could not remember. He was surprised to hear that *A. argentea* Don was really native in Britain.

909. A. COLORATA Buser in Bull. Soc. Dauph. Ech. Pl., ser. iii., 99, 1892. Cave Hill, Belfast, Antrim, S. A. STEWART & G. C. DRUCE. The above has been kindly identified by M. Jaquet, who says:—" c'est étonnant mais enfin c'est cela *A. colorata* Bus. Sn. Pubescentes Catal. Fl. Valais, p. 111."

909. A. CORIACEA Buser in Bull. Soc. Dauph., ser. 2, iii., 108, 1892. This is the plant which was sent to the Club (See *Rep. B.E.C.* 342, 1915) by R. and M. CORSTORPHINE, September 1918, from roadside near Friock-

heim, Forfarshire. It was suggested that it might be a hybrid of *alpestris* and *minor*. Bucknall and White thought it was *alpestris*, and Salmon did not think it was of hybrid origin. F. Jaquet has recently identified it as *coriacea* Buser. It has the stem and petioles glabrous as contrasted with most members of this vulgaris group. The leaves are usually large, more or less undulated, with 7-9 lobes, the pubescence almost confined to the nerves on the under surface and to the leaf teeth. The flowers are fairly large, and the pedicels equal or are longer than the urceoles.

909. A. SALMONIANA F. Jaquet in Journ. Bot. 280, 1926. Found by C. E. SALMON on calcareous rocks at 600 metres in Cumberland. It belongs to the group Heteropodae, although it resembles the Splendentes in habit and colour of the leaves which are of a dark bluish-green. The specific name is well deserved, since Mr Salmon has done such excellent work on this genus.

932. ROSA DUMETORUM Thuill., var. SAVERYI W.-Dod. Silverton, Devon, G. B. SAVERY.

950. R. SPINOSISSIMA L., var. CIPHIANA [Sibbald] mihi = R. CIPHIANA, etc., Sibbald, Scot. Illust., 46, 1684 = R. SPINOSISSIMA L., var. b, Sm. Fl. Brit. ii., 537, 1800. Sent by Miss Temperley from the side of the Coquet above Rothbury, Northumberland. There was only one patch, several feet across and one to two feet high, surrounded by other wild rose bushes in quite a wild spot. The foliage of this extraordinary plant is that of *spinosissima*, but the petals are overlapping and of a bright purplish-red colour. Colonel Wolley-Dod says it is the best example of Sibbald's rose which he has seen, and that it is much darker than f. *rosea*, which is not darker than ordinary *canina*. Sibbald's Rose is figured (plate 2) in his *Scotia Illustrata* of 1684, and on p. 46 he writes "Rosa Ciphiana, seu Pimpinellae foliis flore eleganter variegato. Catal. Horti Medici Edinburgensis. Rosam hanc, quod in Praedio meo Ciphiano sponte nascitur, Ciphianum appellavi. Ea cum non occurrat apud ullum ex Scriptoribus Botanicis, quos mihi videre contigit, digna visa est quae describatur." Having described the root, stem, and foliage, Sibbald goes on to say:—"Inter quae ex pediculo suo calyx propendet, quo aperto exerit se flos simplex tinctus rubedine varia, in quibusdan saturatiore, in aliis dilutiore, in omnibus virgulis albis pulchre distincta. Cui deciduo succedit pomum coloris atro-rubentis rotundius et minus Cynorrhodi vulgaris pomis, id lanugine quadam et seminibus oblongo-rotundis, et ex inferne parte magis compressis, et ex basi latiore, cordis effigie in conum definentibus repletum. Flos eximium odorem de se fundit, qua pollet tenuitate, penetrantem." Sibbald alludes to the galls which infect leaves, and says:—"Nascitur in colle quodam Praedii nostri Ciphiano Austro observo, declivi admodum cautibus squalido, nec alibi, quod sciam, conspicitur. Perennis est planta. In hortos translata tum floris variegationem, tum suaviasimum odorem conservat. Eam

Sapphicis Versibus suse descripsi et vires ejus enarravi in Ode quadam. quae ad hujus libri valcem habetur." Although indexed in *Index Kewensis* as of *Sm. Fl. Brit.* ii., 537, 1800, there is no valid publication of the name in that work as no binomial is used. Under *R. spinosissima*, the var. b has the synonym, "*R. Ciphiana* seu *R. pimpinellae*," etc., cited but there is no additional information. In Smith's *English Flora* ii., 376, it is merely alluded to as var b. *Ciphiana*, he says, Sibbald gathered on his own estate in Scotland, and adds that the variegated rose is frequently cultivated in gardens. It is not referred to in the *Flora Scotica*, nor by Syme in *English Botany*, and hitherto there seems no valid publication of its name. Strictly speaking, this Coquet Rose is not typical *Ciphiana*, which is a variegated, not a concolorous, Burnet rose.

965. CRATAEGUS ARONIA Bosc. [2869]. Alien, Europe. On the border of an arable field above Leatherhead, Surrey, C. E. BRITTON. Allied to *C. Azarolus* L.

1061. OENOTHERA BIENNIS L., OE. GRANDIFLORA Sol. and OE. LAMARCKIANA De Vries in England, by Bradley Moore Davis in *Proc. of the American Phil. Soc.* lxv., 349, 1926. The author has given valuable details of the plants mentioned. The distinguishing features of *biennis* and *Lamarckiana* are said to be:—

	OE. BIENNIS.	OE. LAMARCKIANA.
Mature Buds.	5.5-6 cm. long.	8-9 cm. long.
Sepal Tips.	3-4 mm. long.	6-8 mm. long.
Petals.	2-2.5 cm. long.	4-4.5 cm. long.
Stigma.	About 3 mm. *below* the tips of the anthers.	5-7 mm. *above* the tips of the anthers.
Stems.	Green above, the papillae never red.	With large red papillae over the green portions of stem.

He holds that *Oe. biennis* Smith Eng. Bot. and Smith Herb. is the same as that of the Sp. Plantarum. J. Shepherd collected it on sandhills a few miles north of Liverpool in 1805, the date when Sowerby drew his figure, which is not satisfactory, and which Dr Gates believes to represent *Lamarckiana*. A long list of localities of *biennis* is given. I am sorry I was away from Oxford when Dr Davis came so that my own collection was not seen by him.

Regarding *Oe. grandiflora* Sol. Davis holds that it has not established itself in Britain. He gives the contrasting features of it and *Lamarckiana* as folows:—

	OE. GRANDIFLORA.	OE. LAMARCKIANA.
Stems—	Pubescent, green above, reddish below, papillae never red, over green portions of stem.	Heavy pilose and puberulent pubescence, numerous red papillae over green portions of stem.
Leaves—	Smaller, lanceolate, distinctly petioled, plane, with less pubescence.	Larger, broader, short petioled or almost sessile, the larger crinkled, more evident pubescence.

Flowering Shoots—Clustered, approximate branching.	Frequently single long branches.
Inflorescence—More open, narrower bracts.	Dense spike, crowded, flat-topped, broader bracts.
Buds—Long slender hypanthium and slender cone.	Stronger hypanthium and much wider cone.
Sepals—Glabrous or almost glabrous.	With heavy pilose and puberulent pubescence.
Sepal-Tips—8-10 mm. long, attenuate, with relatively little pubescence.	6-8 mm. long, thicker and with heavy pilose pubescence.
Ovary—Glabrous.	Strongly pilose and puberulent.
Capsules—2.5-3 cm. long, glabrous.	2-2.5 cm. long, strongly pilose and puberulent.

Oe. biennis differs from *grandiflora* in its smaller flowers, in the stigma being below the anther tips, and in its being hairy. Solander named *grandiflora* from material grown at Kew. It was said to be introduced by John Fothergill in 1778 to whom John Bartram, its discoverer in Alabama in 1776, sent seeds. There is a specimen from Colchester (St Botolph Station, J. D. Gray, 1881) at Cambridge. Davis holds that *Lamarckiana* De Vries (not Seringe) was not introduced into Britain before 1870, the earliest specimen known being collected by Churchill Babington in a cornfield, not truly wild, at Corkfield [Cockfield], Suffolk, in 1871, and by A. French near the L.N.W. Railway Station in 1872. This habitat is in Northants not Oxford, as stated. He thinks it was introduced by Carter & Co., of London, who placed it as a novelty in 1860.

In addition to these three there are several narrow-leaved plants near to *Lamarckiana* which require further study. Some of these were sent out by Charles Bailey in his St Anne's gatherings. *Lamarckiana* itself is, Davis suggests, an impure species, behaving like a hybrid, and possibly owing its origin to a cross between *biennis* and some narrow-leaved large-flowered Oenothera.

1072. CIRCAEA LUTETIANA L. An albino form was sent by Miss COTTES from Hove.

222 (2). LAGENARIA Seringe in Mém. Soc. Phys. Génév. iii., p. 1, 25, 1825.

1074 (10). LAGENARIA LAGENARIA (L.). L. VULGARIS Seringe. CUCURBITA LAGENARIA L. Alien, Tropics. Dagenham, S. Essex, 1926, R. MELVILLE.

206 (4). CUCURBITA [Tourn.] L.

1075. CUCUBITA PEPO L. Alien, Orient., &c. Dagenham, E. Essex, R. MELVILLE.

1075. CITRULLUS VULGARIS Schrad. Alien, Africa. Dagenham, S. Essex, 1926, R. MELVILLE.

1101. AMMI MAJUS L., var. GLAUCIFOLIUM (L.) Noul. Waste ground. Bristol, W. Gloster, C. & N. SANDWITH.

1155. TORDYLIUM MAXIMUM L. Colonel Wolley-Dod writes that he heard that this plant was at Eton after his father took up residence there in 1850, and that it might possibly have continued to grow there for some years longer.

1160. DAUCUS CAROTA L., lusus. [2338] A form with green corolla, having purple tips. Portland, Dorset, J. COOPER, ex G. C. BROWN.

253 (2). ARALIA [Tourn.] L.

1171 (5). ARALIA RACEMOSA L. Alien. North America. Hortal. Newlands, Lanark, 1926, R. GRIERSON.

1172. HEDERA HELIX L. It may be propagated by its leaves which develop roots. See *Gard. Chron.* i., 82, 1926, with a plate showing a leaf which had been buried for thirteen months producing roots. R. T. PEARL & W. M. WARE.

1175. CORNUS MAS L. Alien, Europe. Hortal. Near Little Cheverell House, Devizes, Wilts. Several bushes in a hedge, but not near habitations, M. D. LUCE, ex Lady DAVY.

1278. HELICHRYSUM BRACTEATUM Andrews Bot. Repos., under t. 428. Willd. En. Hort. Berol. 869. Nicholson Gard. Dict., t. 201. Alien. Australia. Hortal. Giffnock, Renfrew, R. GRIERSON.

1285. PULICARIA DYSENTERICA S. F. Gray, lusus ANGUSTIFOLIA. An extraordinary form gathered by Major ORME in a marshy cover at Burghfield by the lane from Sheffield Bottom to Burghfield Mill, Berks. One large plant growing with the ordinary form. The plant has narrow linear leaves, one-eighth of an inch broad by two inches long. At their base there is a growth of whitish hair. Its appearance suggested some injury from insects, but Mr Swainton tells me the peculiarity is not due to galls, therefore it is probably owing to some physiological cause. The plant is much branched, and has a very distinct appearance. G. C. DRUCE.

1408 (30). SENECIO TANGUTICUS Maxim. Alien, China. Hortal. A well known tall, ornamental, yellow-flowered species found by the Cart. Newlands, Lanark, R. GRIERSON.

1458. CENTAUREA GYMNOCARPA Moris. Alien. Ins. Capraja. Hortal. Garden escape. Sand of St Brelade's Bay, Jersey, L. ARSENE. Named by Mr FRASER.

1468. C. ASPERA Willd., var. AURICULARIA DC. Quenvais, Jersey. J. W. WHITE. Det C. E. BRITTON, in *Wats. B.E.C.*, 1924-5.

1491. PICRIS SPRENGERIANA Poir. Enc. v., 310. Alien, S. Europe. Medit. Fowl-run, Bristol, W. Gloster, C. & N. SANDWITH.

1510 (2). HIERACIUM BAUHINII Bess. Alien, Europe. On an iron railway bridge, Great Bedwyn, Wilts, C. P. HURST.

1544. H. STENOTUM Dahlst. Modification. Glen Fiagh, Forfar, G. C. DRUCE. See Zahn 253, n. 19. One of the Oreades under *extensum*. Rev. J. Roffey refers it to *argenteum-nitidum*.

1547. H. BASICRINUM Zahn. (H. SOMMERFELTII, var. TACTUM LINTON). To this the Rev. J. Roffey refers a plant gathered on the path from the base of Topley Pike to Chelmerton, near the Churn Hole, Derbyshire, which Dahlstedt says is nearly allied to his *H. plumuligerum*. See Zahn 234.

1547. H. SOMMERFELTII Lindeb., var. SPLENDENS F. J. H. Clova, Forfar. I brought a root from Clova which Linton so named. It seeded freely, and has spread on to the adjacent walls. Specimens are distributed this year. It has now received three different names, the Rev. J. Roffey names DD794 *H. rubicundiforme* Zahn, *rubicundum* of F. J. H., not of N. P. See Zahn 204, where it is grouped with the Cerinthoidea, while *Sommerfeltii* is put (*l.c.* 272) among the Oreades. Dahlstedt thought it was one of the silvatica allied to *serratifrons*.

1561. H. LEUCOGRAPTUM Dahlst. Plants which I gathered in Glen Fiagh, Clova, Forfar, in 1926 were said to be allied to this Hawkweed by Dahlstedt. Zahn places *H. kalsoense* Dahlst. (*l.c.* 188) under which it comes, in the Cerinthoidea. The Rev. J. Roffey refers the Clova plants to *H. clovense* Linton.

1568. H. EXOTERICUM Jord., forma MACRODON Zahn. Abergavenny, Monmouth. So named by Rev. J. Roffey. Dahlstedt says it is allied to *H. Koehleri* Dahlst. See Zahn 315. The Surrey *pellucidum* of Linton's set (n. 37) is identified with it by Zahn. *Koehleri* is put three species away from Jordan's plant in Zahn's Monograph.

1568. H. LUCIDULUM Ley. The Lambridge plant [Oxon DD95] Dahlstedt says is allied to *melanolepis* Almq., but differs especially in its narrower heads, with narrower and more acute phyllaries. Zahn puts it under *pellucidum* with which it was at one time identified. Another plant placed by Roffey under *lucidulum* from railway-cutting near Symond's Yat Dahlstedt says is allied to *lacerifolium* Almq. See Zahn 390, where it is placed among the Euvulgata-caesia = *H. triangulare* Zahn. It is quite unlike the Lambridge plant in facies.

1570. H. INTEGRATUM Dahlst. Steeple Aston, Oxford. Plants "nearly related to this," teste DAHLSTEDT. See Zahn 321, where it is placed near *variicolor*.

1603. H. ORARIUM Lindb. New Brighton, Cheshire. See Zahn 467, but Dahlstedt thinks it is near *H. polycomum* Dahlst., not of N.P., which Zahn (p. 901) puts in the true Hieracia as *H. polycomatum* Zahn.

1604. H. SUBIMPRESSUM Dahlst., nov. sp. Ab *Hieracio impresso* Norrl., cui est valde similis, haec species praecipue foliis minus dentatis, subintegris nec non pedicellis inter pilos dense—sat dense glandulosis pileique involucri dimidiate glandulosi longiorius densioribus est distincta. From *H. impressum* this species differs by the scarcely dentate leaves and the very numerous glandules on the pedicels and the involucra. *H. impressum* is nearly destitute of glandules on the pedicels and heads. Glen Fiagh, Clova, Forfar, July 1926, G. C. DRUCE. *H. impressum* Norrlin is put by Zahn as a sub-species, n. 38, of *H. subramosum* Lönnroth.

1614. H. MEGOPODIUM Dahlst., nova sp. Caulis altus, 2-3 foliatus, inferne dense superne sparsius pilosus, supra medium ± stellatus ramos florigeros saepe ex axillis fol. summorum edens. Folia rosularia, longe petiolata, sub anthese partim emarcida, ovalia-obovata, sparsim breve et late dentata, caulina 2-3 inferiora, longe petiolata, ± ovalia—ovata-ovalia, basi ± descendente truncata late et sparsim dentata superiora ad basin grossius dentata, obtusiuscula, folium summum breve petiolatum—sessile basi truncata grossius dentatum, omnia supra sat laete viridia, subtus pallidiora. Anthela longa paniculata, polycephala, ramis ramulisque acladium 10-15 mm. longum, longe—longissime superantibus, ± stellatis sparsim superne et praesertim in pedicellis densius glandulosa, sat pilosa. Involucrum parvum, basi ovata, ± atrovirens. H. Dalhstedt *in lit*. Ashdown Forest, Sussex, July 1926, G. C. DRUCE, with Countess BUXTON. Rev. J. Roffey speaks of it as "quite ordinary *H. diaphanoides*." Dr Zahn says it is a sub-species of *diaphanoides*, but it is different from the type. "Involucris obscuris basi tantum parco floccosis; pedicellis parce vel dispersis breviter pilosis; squamis pilis paucis brevibus obscuris orbitis; glandulis minus numerosis brevibus ± obscuris, etc." The plant is undoubtedly identical with *H. diaphanoides*, var. *apiculatum* Linton Brit. Hierac. n. 70, but differs sufficiently to be a good sub-species (*megapodium*) of *H. diaphanoides* Lindb. Dr Zahn sent a head of the true *diaphanoides* from Thuringia and the distinctness of the two plants is obvious. On the principle of the permanence of the trivial this would stand as *H. apiculatum* (Lint.) nov. comb. G. C. DRUCE.

1630. H. SCYTOPHYLLUM Omang. (See *Rep. B.E.C.* 997, 1925.) Named by Dahlstedt, from Yspytty Cynfyn, Cardigan, it is identified as *scanicum* by Roffey, for which Zahn 367 does not give Britain. *H. scytophyllum* is described on p. 451, but no British locality is mentioned.

1640. HYPOCHAERIS RADICATA L., lusus FASCIATA. Flower-head fasciated with three divisions. Poltescue, Cornwall, Miss TODD.

1642. LEONTODON HISPIDUS L., var. vel lusus CUCULLATUS Dr. Ligules tubular. Melkinthorpe, Westmorland. Sent by H. BRITTEN.

1645. TARAXACUM ADIANTIFRONS Ekm. Vulgaria. Stonesfield, Oxon, G. C. DRUCE.

1645. T. ALIENUM Dahlst., nova sp. Vulgaria. Folia laete viridiae, linearii-lanceolata, lobes in fol. deltoidea retroversis, subhamatis, ± dentatis, superioribus integris, acute, lobo terminali hastato parvo-medioeri, margine convexo, ± integro, obtusiusculo, lobis interioribus magis et acute dentatis acutioribus, lobo terminali magno inferne saepe denticulato, petioles et nervo mediano ± pallides. Scapi folia aequantes in parte superiore, saepe ± colorati. Involucrum parvum olivaceo-virescens, basi ovata. Squamae exteriores erecto-patentes-subrecurvae, aug. ovato-lanceolata lanceolatae, anguste marginatae et ± violascentes, int. lineares omnes, apice ± purpurascentes. Calathium c. 70-75 mm. dia. Ligulae sat obscure luteae, marginales extus striae purpureo-violacea notatae. Antherae polliniferae. Stylus et stigma ± fuscescentes. The plant has a very close resemblance to *T. hamatum* as regards the outer leaves but differs in the paler colour and the leaves have less recurved lobes and narrower outer phyllaries, which are only a very little marginated. Sandy places, Penally, Pembroke; Swansea Bay, Glamorgan; Sandhurst, Berks [DD62]; Byfleet, Surrey; Bletchingdon, Charlbury, Studley [DD30], Coombe Wood, Oxon; Newport, Monmouth; Highnam, W. Gloster, G. C. DRUCE.

1645. T. BRITANNICUM Dahlst., nova sp. Spectabilia. Folia sat laete viridia, longa linearia—lineari-lanceolata, aequaliter lobata, lobis brevibus sat latis deltoideus—hamatis integris—parce dentatis sat approximatis lobo terminali triangulari—sagittato obtuso—breve acuminato, petiolis et nervo mediano sat lucide violascentibus. Scapi elongati, ± colorati. Involucrum breve crassum atroviride, basi—ovata. Squamae exteriores ± adpressae, ovatae- ovali-lanceolatae, ± albo marginatae. Calathium c. 40-45 mm. diam. Ligulae sat obscure luteae, marginatae subtus stria, fusco-purpurae notatae. Antherae polliniferae. Stylus c. stigm. virescens, siccus nigrescens. Achenium ± stramineum apice spinulorem caeterum fere laeve in pyramid. c. 0.7 mm. longam, breve conicam sensim abiens. Rostrum 7 mm. longum. Nearly allied to *deviens* and *spectabile*. Oxford; damp places in sand-dunes, Penally, Pembroke, G. C. DRUCE.

1645. T. CONVEXUM Dahlst. Studley, Adderbury [DD49], Oxon; Kingston Hill, Berks, 1926, G. C. DRUCE.

1645. T. EXPALLESCENS Dahlst. Vulgaria. Byfleet, Surrey, G. C. DRUCE.

1645. T. FAEROENSE Dahlst., forma ANGUSTIFOLIUM Dahlst. Links of Boardhouse, Birsay, Orkney, June 1925 [2957B], H. H. JOHNSTON.

1645. T. HAMATIFRONS Dahlst. in Trans. Bot. Soc. Edin. 302. 1926. In its spotted leaves it has a resemblance to the Spectabilia, but its fruits remind us of Vulgaria to which group it probably belongs. In the form of its leaves and their lobes it is very like *hamatum*, but differs especially from it in its narrow recurved, not marginated, outer phyllaries. Clouster Brae, Stromness, Orkney, May 1925 [2902], **H. H. JOHNSTON.**

1645. T. LAETIFORME Dahlst. Erythrospermae. Sund dunes. Tenby, Pembroke, 1926, **G. C. DRUCE.**

1645. T. LIMBATUM Dahlst. Erythrospermae. Lindm. Svensk Fl. 575. Penally, Pembroke; Kenfig, Glamorgan; Weston-super-Mare, N. Somerset, **G. C. DRUCE.** Allied to this, teste **DAHLSTEDT.**

1645. T. MACROLOBUM Dahlst. Byfleet, Surrey, **G. C. DRUCE.**

1645. T. NAEVOSIFORME Dahlst., forma MEDIANS Dahlst. Frumland, Romsay, Orkney, 1925 [2919], **H. H. JOHNSTON.**

1645. T. NAEVOSUM Dahlst, forma CROCATUM Dahlst. South end, Stromness Town, Orkney, 1925 [2950], **H. H. JOHNSTON.**

1645. T. ORCADENSE Dahlst., n. sp. Vulgaria. Folia saturate viridia, subtus pallidiora, supra immaculata, ± lata, obovato-oblonga—oblonga, exteriora angustiora lingulato-lanceolata lobis brevibus deltoideis integris—denticulatis praedita, interiora magis magisque lata lobis crebris superne latioribus deltoides—subhamatis in margine superiore ± convexo denticulatis—integris, ± acutis, lobo terminali plerumque magus—maximo ovato—sagittato integro v. interdum ad basim ± dentato, breve acuto, mucronato, petiolis et nervo mediano ± violascentibus. Scapi plures, folia aequantes—superantes, glabri, ± colorati. Involucrum breve, crassum, atrovirens, basi ± ovato-truncata. Squamae exteriores ± reflexo-patentes anguste ovato-lanceolatae in pag. exteriore atrovirides, in pag. interiore pallidiores et saepe ± violascentes, interiores e basi latiore ± lineares apice obtusiusculo ± coloratae. Calathium 40-45 mm. dia. Ligulae luteae, marginales extus stria brauneo-violacea ornatae. Antherae polliniferae. Stylus et stigmata flavescentes. Grassy ditch at roadside, 150 feet above sea-level, Tiffyhall, Deerness, Mainland, 21st April 1922, and 12th May 1925; rocky crags on hillside, 700 feet above sea-level, north-east side of Ward Hill, Hoy, Orkney, 12th June 1925, **H. H. JOHNSTON** in *Trans. Bot. Soc. Edin.* 304-305, 1926.

1645. T. PICEATUM Dahlst. Vulgaria. Lindm. *l.c.* 583. Sunningwell, Berks, **G. C. DRUCE.** Allied to this, teste **DAHLSTEDT.**

1645. T. PRAESTANS Lindb. f. Spectabilia. Lindm. Svensk Fl. 578. High Force, Durham; Bletchingdon, Oxon; Tenby, Penally, Pembroke, **G. C. DRUCE.**

1645. T. REFLEXIFOLIUM Lindb. f. in Soc. Faun. et Fenn. 35. 1908. Fasc. Dahlst. 37, 1911. Dahlst. Nord Tarax. 105, 1912. Adderbury, Oxon, May 1926, G. C. DRUCE.

1645. T. SCANDICUM Dahlst. Erythrospermae. Lindm. Svensk Fl. 574. Seaton Carew, Durham, H. E. FOX; Hunstanton, Norfolk, G. C. DRUCE. Allied to this, teste DAHLSTEDT.

1645. T. SUBLUTESCENS Dahlst., nova sp. Folia longa anguste oblongo-lanceolata, obscure viridia, multiloba, lobis deorsum durescentibus subapproximatis, interlobiis brevibus laetiusculis, ± dentatis sejunctis, ± deltoideis, inferioribus angustioribus, apicibus patentibus-resupinatis, inaequaliter, acute et sat longe dentatis, superioribus latioribus grosse dentati, summis subintegris-retroversis lobi terminali ± ovato-sagittato, subintegro, in fol. intimes, magno et saepe magis dentati ± obscuro, petioles et nervo mediano saepius valde violascentibus. Scapi folia ± superantes basi apiceque ± colorati. Involucrum mediocre, ± atrovirens basi ovato-truncata. Calathium 45-50 mm. diam. Ligulae sat obscure luteae marginalis, extus stria obscure cano-purpurea, notatae. Antherae polliniferae. Stylus cum stigma ± fuscescens. Achenium brunno-stramineum, c. 3-3.5 mm. longum c. 1 mm. latum, apice acute spinulorum caeterum crebre tuberculatum, pyramide c. 0.7 longa, conica. Rostrum 8.5-9 longum. Gairloch, West Ross; Oxford, G. C. DRUCE.

1645. T. SUBSIMILE Dahlst., ad interim. Plants in fruit and sparingly in flower. Style and its two recurved branches yellow. Fruit-receptacle flattish-convex. Achenes pale brown. Dr Dahlstedt, in a letter to Col. H. H. Johnston, says:—"Ab *T. naevoso* Dahlst., cui verosimiliter est affine, foliis longius et acutius lobatis, lobis plerumque longioribus acutis interlobiis angustioribus, lobo terminali acuto majore triangulari vel triangulari-hastato, colore petiolorum et nervi mediano pallidiore nec non squamis exterioribus magis angustis sat diversum videtur." Native. Common. Roadside, fifteen feet above sea-level, Carrick House, Eday, Orkney, 7th July 1923, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 89-90, 1924.

1645. T. TANYLEPIOIDES Dahlst., n. sp. A *T. tanylepide*, cui est sat affine, haec species foliis latioribus lobis plurimis longis potentibus—hamatis crebris, lobo terminali latiore et majore brevi, squamis exterioribus angustioribus haud marginatis saepius valde reflexis, interioribus sub apice callosis-leviter corniculatis nec non antheris ut videtur polliniferis satis esse distinctum videtur. This form seems to be very nearly allied to *T. tanylepis*, but seems to differ from it especially through its broader leaves with longer lobes, short broad end lobes and polliniferous anthers. Native. Common. Shell-sandy banks at seashore, ten feet above sea-level, Links of Boardhouse, Birsay, Mainland, Orkney, 8th June 1925, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 303-304, 1926.

1663. TRAGOPOGON MINUS Mill, lusus COMPOSITUS. Flower-head compound as in the Hen-and-Chicken Daisy, the ligules very narrow, and the plant barren. Rock Ferry, Cheshire. Sent by Mr H. E. GREEN.

1743. Anagallis arvensis L., var. serpyllifolia (Lej. & Court.). In a damp dune-bottom, Newborough, Anglesey, Col. M. J. Godfery, ex W. G. Travis.

1804 (7). Anchusa myosotidiflora Lehm. Asp. 234. Alien. Siberia. Near Moreton Hampstead, Devon, in profusion for one to two hundred yards by the roadside, 1926, Colonel Haig.

1813. Myosotis palustris Hill, var. laxiflora DC. Arisaig, W. Inverness, 1903; Hertford; Bulstrode, Bucks, G. C. Druce, teste A. E. Wade.

Var. commutata R. & S. Bladon, Oxon, 1915, see *Rep. B.E.C.* Cothill, Berks [AA301], 1923, G. C. Druce, teste A. E. Wade.

1815 (2). M. brevifolia C. E. Salmon in Journ. Bot. 294, 1926. Ullswater, Heltondale, near Hawes Water, Cross Fell, Westmorland; Thirlmere, Borrodale, Melmerby, Cumberland; Moffat, Dumfries, are cited as localities. It has smaller calyces and shorter fruiting pedicels than *repens* or *caespitosa*. It has shorter and blunter leaves, longer calyx segments and larger flowers than *caespitosa*. Its appressed pubescence, smaller leaves on stolons, longer pedicels, and calyx segments distinguish it from *repens* and from *palustris* it is known by its longer calyx segments, shorter styles, and smaller flowers.

1821. M. versicolor Sm., var. multicaulis Bosch. Benham, Berks, 1892, G. C. Druce, teste A. E. Wade.

Var. dubia R. & F. Menmarsh, Oxon; Filby, Norfolk, G. C. Druce.

1850. Solanum Capsicastrum Link. Alien, Brazil. Dagenham, S. Essex, 1926, R. Melville.

1850. S. aculeatissimum Jacq. Alien, S. America. Dagenham, S. Essex, 1926, R. Melville.

1850. S. sisymbriifolium Lam. Alien, N. America, Mexico. Southwick, Sussex, Miss Cottes. Det. A. Thellung.

1858. Hyoscyamus muticus L. Mantissa i., 45. Alien, Egypt, etc. Dagenham, S. Essex, R. Melville.

1873. Linaria Linaria (L.) Karst., lusus ecalcarata Dr. Near Ilfracombe, N. Devon. Sent by Mr W. T. Boydon Ridge, who says he found a similar specimen there eight years ago. It has the mouth of the corolla wide open and is without a spur.

1880. L. Pelisseriana Mill. Alien. Found, Dr Dukinfield Scott tells me, by Mrs E. Yeldham, in rough ground attached to the old farm house, a cottage adjoining Dr Scott's garden at Great Oakley, N. Hants. Although the ground is now uncultivated, it is so close to the cottage that it may well have once been part of the garden. The plant has appeared for several years in succession. Dr Scott has no record of its being cultivated in his garden or that of the cottage, nor has he seen it in the neighbourhood. Still it is cultivated, and once, he says, he saw it in a garden near Wytham, Berks. Recorded by Mr J. Rayner from the Hampshire locality.

1908. Veronica Chamaedrys L., var. lamiifolia Beck Fl. Nord-Oest. ii., 72, 1052, 1893. See C. E. Britton in Journ. Bot. 326, 1926. Several localities in Surrey and elsewhere in Britain. To this belongs a long-petioled, broad-leaved plant from Raehill, Dumfries.

1914. V. serpyllifolia L., var. rotundifolia Beck. Between Hindhead and Frensham, Surrey, Beeby, 1882. See C. E. Britton in *Journ. Bot.* 326, 1926. It may be the *V. rotundifolia* of Schrank. A plant from Cowden, Kent, seems to come under this. The leaves are three-quarters of an inch long by nearly five-eighths broad, with nearly entire margins, the inflorescence 2½ inches long. A plant from St Helier's approaches this.

1924. V. agrestis L., var. micrantha Drabble in Journ. Bot. 25, 1926. On boulder-clay at Finchley, Middlesex. It has a minute and pale-coloured corolla.

1960. Melampyrum pratense L. (sub-sp. vulgatum), var. vulgatum Beck, sub-var. laurifolium Beauv., forma nova subvalidum Beauv., ined. Caulis ± debilis, circa 1 mm. diam.; folia caulina ± anguste lanceolata, cetera ut in sub-var. *typica*. Wellington College, Berks [R5111], July 1918, G. C. Druce. A variety from Hambledon, Hants, requires further study, G. C. Druce.

1960. M. pratense L. (eu-pratense), var. scotianum Beauv., forma nova pygmaeum Beauv. Tuba pygmaea; inflorescentia ad 11 nodum situm. At 3000 feet, Ben Bhrotain, Aberdeen, H. E. Fox; Cairngorm, G. C. Druce. Dr Beauverd now considers *scotianum* deserves varietal rank.

1960. M. pratense L. (sub-sp. vulgatum), var. integerrimum Döll. sub-var. pseudosylvaticum Beauv. Hareshaw Burn, Northumberland; Braemar, S. Aberdeen [AA.322], G. C. Druce.

1961. M. sylvaticum L., var. edentatum Schur Enum. Pl. Transs. 506, 1866. Crow Glen, Belfast. G. C. Druce.

1990. Mentha longifolia × spicata = ? M. Nouletiana Timb.-Lagr. Near Berrow, Somerset, Rev. E. S. Marshall; Belfast, escape from cultivation. See *Journ. Bot.* 282, 1926, J. W. White.

2056. Stachys sylvatica L. A teratological form with the corolla nearly regular. Sent by Mr Arnold Cobb, in September, from Tilehurst, Berks.

[2093. PLANTAGO MONOSPERMA Pourr. See *Journ. Bot.* 15, 1926. This plant exists in the herbarium of that untrustworthy botanist, Mr W. Andrews, labelled *P. argentea*, Great Aran Isle, 1849. Search should be made as, until verified, the record cannot be accepted as evidence of its occurrence in the Irish Aran.]

580 (2). TELANTHERA R. Br. in Tuckey Congo 477, 1818.
2116 (31). T. FICOIDEA Moq. ALTERNANTHERA FICOIDEA R. Br. Alien. Tropical America. Avonmouth, W. Gloster, C. & N. SANDWITH.

2117. CHENOPODIUM RUBRUM L., forma ANGUSTIFOLIA Murr. in litt. Tiverton, Devon, Lt.-Col. G. WATTS.

2123. C. OPULIFOLIUM × STRIATUM. Barry, Glamorgan, October 1926, with R. SMITH, R. MELVILLE, and Miss VACHELL. To Miss Vachell we dedicate the hybrid as *C. Vachelliae*.

2124. C. ALBUM × ZCHACKEI = C. SUBCUNEATUM Murr. Colchester, Essex [2360], G. C. BROWN; Burton-on-Trent, Staffs, G. C. DRUCE. The latter has mucronate leaves.

2124. C. ALBUM × FICIFOLIUM = C. ZAHNII Murr. Burton-on-Trent, Staffs, G. C. DRUCE and Sir R. CURTIS.

2124. C. ALBUM × OPULIFOLIUM, var. MUCRONATUM = C. PREISMANNIANUM Murr. Barry, Glamorgan, G. C. DRUCE.

2143. ATRIPLEX LITTORALIS L., var. DENTATA Hornem. Newport, Monmouth, on waste ground, R. MELVILLE. Det. A. THELLUNG. A more slender plant than our var. *serrata*.

2151. A. PALAESTINA Boiss. Alien, Syria, etc. To this probably belong flowerless plants from Galashiels, G. C. DRUCE & Miss I. M. HAYWARD, and Splott, Glamorgan, G. C. DRUCE & R. L. SMITH.

2177. POLYGONUM HYDROPIPER L., var. DENSIFLORUM Braun. Brox, Surrey, C. E. BRITTON in *Journ. Bot.* 328, 1926. Distinguished from the type by its taller stem, many spreading branches, broad leaves, and very compact green inclined spikes. Mr Britton has sent specimens to the Club.

2188. P. PULCHELLUM Lois. Alien, Medit. Burton-on-Trent, Staffs, G. C. DRUCE. Allied to *arenarium* and *Bellardi*. Det. R. DANSER.

2252. URTICA URENS L., var. PARVIFOLIA Weddell in DC. Prod. xvi., pars i, 48 = U. PARVULA Blume. See Rouy & Fouc. Fl. Fr. xii., 274. Benington, Lincoln, Rev. W. WRIGHT MASON. Leaf blades $\frac{7}{8}$ in. long, $\frac{1}{4}$ in. broad, deeply and acutely toothed, on leaf stalks $\frac{1}{4}$ in. long. An extremely pretty plant.

2290. Populus tremula L., var. Brownii Dr. Leaves five-eighths to seven-eighths in. long by half to three-quarter in. broad, glabrous. A pretty form, and one not previously noticed by me. Gathered by G. C. Brown [2263] on Tiptree Heath, N. Essex, June 1926.

2487. Potamogeton Drucei Fryer. Towards the end of a note on this Dr Druce mentions *P. nerviger* Wolfg. and *P. Griffithii* A. Benn., remarking that Hagström says of the Welsh plant " its hybrid origin, however, is beyond all doubt, and may now-a-days be disputed in earnest by nobody." Well, I did so in *Journ. Bot.* 15, 1919. I have Wolfgang's plant from himself, and grew *Griffithii* with *praelongus* and *alpinus* for six years, and *Griffithii* has nothing to do with *nerviger*, which is essentially an *alpinus* ally. *Griffithii* is an isolation species like *Salmo nigropinnis* (the black-finned Trout) of these isolated Welsh Lakes. They are found nowhere else in the world. **A. Bennett.**

2508. **P. foliosus** Raf. On page 787 of the Secretary's Report of the Botanical Society and Exchange Club for 1925 it is stated that Prof. Fernald (U.S.A.) in a letter to Mr D'Urban writes that *P. foliosus* " is a generally distributed species from tropical America northwards, reaching its north-eastern limits in Nova Scotia, Prince Edward Island, and in Quebec, south of the St Lawrence." This is not so. It reaches its northern limits at Hudson's Bay, 57 degs. north latitude; Cumberland House, 55 degs. north latitude, and Lake Mistassim, 50 degs. 25 min. north latitude, **A. Bennett.**

2514 (2). P. pensylvanicus Willd. herb.! (C. et S.). In the *Potamogetons of the British Isles* the statement is made that this species was " most likely introduced with cotton, as it is one of the common species in the United States, being abundant in the States where cotton is grown." Prof. M. L. Fernald writes that the above statement amazes him since " *P. pensylvanicus* is, as far as we know, quite unknown from the cotton belt, the latter region being a fairly well defined area of the Southern United States; the pondweed being an essentially northern species occurring in two areas--one extending from southern Labrador to the mountains of northernmost Georgia, the other along the Pacific slope from Alaska to California." I am amazed at his statement. The species grows in Georgia, Glasgow herb.! Beyrich sp. 1834; Carolina, Nugel sp. 1842; Louisiana, Melvill herb.!; Virginia, Vienna herb.!, and Tennessee, Gattinger sp., 1878. Here we have five of the States in which it occurs, and where cotton is grown. So long ago as 1795 these States exported 5,250,000 lbs. of cotton which was greatly increased when Whitney invented his Cotton-jig. Prof. Fernald seems to have forgotten his letter of June 15, 1908, printed in the *Naturalist* for October 1908, p. 378, when he writes that the species may be a native of Great Britain. I sent his letter to the lady, Miss Vigins, who found the plant in Yorkshire. She replied:— " The plant grows exactly at the spot where the water from the cotton mill enters the canal. That is an absolute fact, which I can vouch for. So if you write to the American

I hope you will tell him that he is mistaken (!) about its ' polar origin'." For further notes on the species, as introduced to Great Britain, see *Naturalist* 1908, p. 10 and p. 373, and *Trans. Bot. Soc. Edin.* 1908, p 311. A. BENNETT.

2639. SETARIA VIRIDIS Beauv., var. WEINMANNI (R. & S.) Dr. = PANICUM WEINMANNI Roem. & Schult. Syst. ii., 490, 1817 = S. PURPURASCENS Opiz. Spikelets and bristles more or less purplish or violet. Ware, Herts, Miss TROWER and G. C. DRUCE; Grimsbury, Northants; Abingdon, Berks, G. C. DRUCE.

2666. ALOPECURUS GENICULATUS L., var. TUBEROSUS A. & G. Salt marsh by Colne, Wivenhoe, N. Essex, June 26, 1926 [2343]. G. C. BROWN. The earlier trivial var. BULBOSUS (Sonder Fl. Hamb. 32, 1851) was rejected by Ascherson & Graebner to avoid confusion. G. C. DRUCE.

2737 (2). CYNOSURUS ELEGANS Desf. Alien, Medit. Splott, Glamorgan, 1926, R. MELVILLE and R. L. SMITH.

2737. C. ECHINATUS L., var. PURPURASCENS Ten. Burton-on-Trent, Staffs, G. C. DRUCE & Sir R. CURTIS.

2748 (2). ERAGROSTIS BARRELIERI Daveau. Alien, Medit. Avonmouth, W. Gloster, C. & N. SANDWITH.

2748 (3). E. PILOSA Beauv. Alien, Tropics. Avonmouth, W. Gloster, C. & N. SANDWITH; Grays, Essex, R. MELVILLE.

2830. AGROPYRON REPENS Beauv., var. CAESIUM (Presl) Beck. See C. E. BRITTON in *Journ. Bot.* 328, 1926. Beck separates this from ordinary *repens* in having the leaf-sheaths hairy not glabrous. It is a strong glaucous forms which Ascherson and Graebner says remains constant in culture. This also exists as a form with clear green leaves (var. *viride* Marsson), which Mr Britton says occurs in Surrey as well as the var. *caesium*. In the *Flora of Oxfordshire* (long printed off) *caesium* is included from Banbury, my No. 7116, and Binsey Lane, but a specimen from Milverton, Warwick (H. Bromwich in *Rep. B.E.C.* 1887), which Hackel called *A. repens*, var. *arvense* Reichb., has a few scattered hairs on the leaf sheaths, but it is not caesian. Other plants show a series of hyaline dots, but the hairy sheathed plant is evidently rare.

2844 (4). TRITICUM (AEGILOPS) BICORNE Jaub. & Spach. Alien. Bristol, Somerset, C. & N. SANDWITH.

2876. EUPTERIS AQUILINA (L.) Newm., var. MULTIFIDA (Wollaston). Burnley, Lancs, C. R. RICHINGS, ex H. BRITTEN.

2878 (2). BLECHNUM ALPINUM = LOMARIA ALPINA. Alien. Brazil. See Nicholson in *Gard. Dict.* iv., 293. t. 415. Growing freely in cracks of flags and on old walls, Dunmore, Donegal, F. R. BROWNING.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1926.

(Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.)

Almquist, Ernst. Zur Artbildung in der frein Natur. In this valuable contribution to the Acti Hort. Berg. 37-76, 1926, 12 hybrids of *Bursa pastoris* are figured, and a long account of that most interesting plant, *B. Hegeri*, is given. References are also made to *Lychnis alba* × *dioica* and *Geum intermedium*.

Annals of Applied Biology. Edited by W. B. Brierly & D. Ward Cutler. Camb. Univ. Press, 2 parts, 1926; 24/-.

Annals of Botany. Editors, V. H. Blackman, Sc.D., F.R.S.; R. Thaxter, M.A., Ph.D., and others. Oxford University Press—Quarterly, 15/-; Yearly, 45/-.

Arber, Agnes. Monocotyledons: a Morphological Study. pp. 258, fig. 160. Cambridge University Press, 1925; 21/-. Dedicated to the memory of Ethel Sargant, this handsome volume is one of the series of Cambridge Botanical Handbooks, of which works on Ferns, Lichens and Fungi have appeared already. This was to have been produced by the pen of the talented Miss Sargant but her lamented decease brought it to nought. No adequate material had been left for the work so Miss Arber had to take up the torch which had been kindled and yet it had to be illuminated in a different manner from that which had been used by Miss Sargant. This change would not have been resented because as Miss Arber in her graceful dedication says "She was keenly alive to the fact that scientific hypotheses have in their nature no pretension to permanence, and they should be judged by their capacity for bringing light to further generations, to which, in turn, they yield their place. To work with Ethel Sargant was to realise the pursuit of science as an unending adventure of the mind: in dedicating this book to her memory, I dedicate it to the very spirit of research." This important volume has been reviewed by Dr Rendle at considerable length and with great ability. One fact emerges that the Monocotyledons have not necessarily arisen from the Dicotyledons as the result of adaptation to a special mode of life. There is no logical necessity for two cotyledons, and the prolonged search for the missing leaf is because botanists have been hypnotised by their own terminology. The author says we must, at least for the moment, give up the hope of bridging the gulf which separates the great Angiospermic groups. The contents of this very thorough and scholarly work include The Principles of Morphology; The Root; The Axis; Description of the Foliage Leaf and its Interpretation; The Prophyll; here the view is adopted that the phylloclades are leaves—in Rusceae the activity of the axillary bud may be confined to the production of the single leaf, the prophyll; The Seedling and its Significance; The Reproductive Phase; Taxonomy and its Interpretation; Parallelism in Evolution; and a copious Bibliography. Miss Arber in her concluding sentence seems to have become converted to a calvinistic theory of the universe since the conception, foreshadowed nearly a century ago by Theodor Schwann, is quoted with commendation "That not only the eternal harmony of the stars, and the changing phases of the inorganic world, but even the course of the streams of life in its passage down the ages, were determined once and for ever when the reign of law began in the dawn of all things."

BAILEY, L. H. Enumeration of the Eubati native in North America. Gentes Herb. i., 200-300, tt. 91-139, 1925. They are arranged in 11 groups of which a key is given. About 15 new species are described.

BLATTER, ETHELBERT S. J., Ph.D., Professor of Botany at St Xavier's College, Bombay. THE PALMS OF BRITISH INDIA AND CEYLON. pp. xxviii. 600, tt. cvi., text figs. 49, maps 2. Oxford University Press, 1926; 45/-. In these pages we have already reviewed important works and monographs such as Percival's "Wheat Plant," Goulding and Bigwood on "Cotton," Gambier's "Timbers of India," Copeland's "Rice," and Weatherwax on "Maize," as well as more specialised monographs such as Millais' "Rhododendrons." Now we have from a botanist who has written a flora of that "cinder-heap," Aden, this handsome volume, copiously illustrated and splendidly produced, dealing with the Palms of our great dependency. That distinguished botanist, Professor Drude, the author of "The Vegetation of the World," also monographed the Palms. I remember, on being introduced to him, he said he had once been advised to write his name quite clearly as there was a British botanist whose name only differed by a single letter. I said "Yes, Professor Drude, but you took the Palm in more senses than one." The subject of Palms also had Professor Beccari as a brilliant exponent. In this monograph Professor Blatter pays tribute to the arrangement used by Drude in "Die Natürliche Pflanzenfamilien" which he chooses to adopt rather than the one used in "The Flora of British India." In herbaria the study of this group is well-nigh hopeless as they are such an intractable lot to bring on to a herbarium sheet. Professor Blatter says that even the most elaborate description and detailed analysis will never give such an idea of the plant as a good photograph, and he has very generously illustrated the book by many vivid photographs. It may be recalled that Linnaeus only described 15 species. To these Ruiz & Pavon (Ruiz was professor of Botany at Madrid) added 8 and Humboldt and Bonpland 20. Kunth in his "Enumeratio" of 1841 included 356 species. These were increased to 440 with the additions made by Griffith in India. Prof. Blatter says that about 1100 species are now recognised. So far as the East is concerned in Roxburgh's "Flora of India" (he died in 1837) 41 species are mentioned. Griffith, an assistant surgeon, was the botanist to whom the discovery of a large number of plants, including Palms, is due. He travelled very widely, accompanying Wallich to Assam. His posthumous work on "The Palms of the British East Indies" was published in 1850. Professor Blatter, in his Introduction, gives a general description of Palms and their geographical distribution. The only European species is the Mediterranean *Chamaerops humilis*. The family consists of about 130 genera. In British India and Ceylon about 100 species are known, the most conspicuous being *Phoenix sylvestris*, *Borassus flabellifer*, the Coco-nut, and the stately Talipot, *Corypha umbraculifera*. A convenient list of authors is given with the abbreviations of their names. Then follows a detailed description of the indigenous species beginning with the Wild Date Palm, *Phoenix sylvestris*. The generic name was given not from "rising from the ashes" but from purple-coloured, an allusion to the colour of the fruit. Of this tree two whole page illustrations are given. From the sap of it a coarse sugar is obtained. *R. zeylanica*, the Ceylon Date Palm, was described by Trimen. The ordinary Date is *Phoenix dactylifera*, and seedlings of this occur on rubbish heaps, especially near large towns in Britain, to which the vigilant watch of the Sanitary Inspector has condemned some unwholesome material that has been exposed for sale. The excellent account given by De Candolle in his "Origin of Cultivated Plants" is quoted. A sap is obtained by cutting off the head of the tree. It contains sugar and may be drunk as a beverage, but it speedily ferments. From this the spirit, Arrack, is obtained. The cause of date mark or Baghdad boils was for a long time attributed to the produce of the date, but it is now recognised to be due to mosquitoes which convey a small protozoon to mankind in their venomous bites. The Talipot Palm grows to 80 feet high and a magnificant sight is presented as one saw it near Kandy. There is a wonderful avenue of them at Peradeniya. In this garden too there is the striking *Licuala grandis*. Another remarkable illustration is that of the Palmyra Palm, *Borassus flabellifer* in Northern Ceylon, the juice of which affords Toddy. A great deal of ginger beer there is made of Toddy. Jaggery Sugar is another product, as is Ceylon vinegar. The mesocarp, known as Palmyra pulp, is soft, mellow and luscious. Lengthy details of the preparation of these products are given. It may be added that the leaves are largely used for thatching or even as writing material. An excellent account of the Seychelle Island Palm is included as well as a photograph of it in fruit in its classic home on Praslin Island. Camoens mentions the Coco de la mer in his epic of the 16th century. The tree reaches a height of 100 feet. *Raphia vinifera*, as the name suggests, also yields a wine which is obtained by cutting off the terminal inflorescence when the "wine" is procured in large quantities. The Sago Palm, *Metroxylon Sagus*, yields sago which is obtained by splitting the tree into logs from which the soft farinaceous material, after proper elutriation, forms the well-known food substance. A tree of 15 years will yield from 600-800 pounds. Fifty-two species of *Calamus* are described. Some of them afford the rattan of commerce. *Calyota urens* also produces fibrous cords. It, too, yields a kind of Toddy.

The specific name is due to the irritating juice of the fruit. *Arenga saccharifera* is also another Toddy-yielding species, and it has many other important economic uses though the juice of its fruit is irritating. The magnificent avenue of *Oreodoxa oleracea* at Peradeniya is shown. The young tops, like those of many other species, are eaten as cabbage. In beauty *oleracea* is excelled by its congener, *O. regia*, a native of the West Indies. It is to be seen in its glory in the great avenues at Rio. The last species we can find room to allude to is *Areca Catechu* from which the Betel Nut is obtained. Round it much Eastern literature centres. It is a splendid tree up to 100 feet high, but its native home is uncertain. It is wild enough in the Attabadi Valley in Malabar at about 300 feet as Mr Fisher, who is cited here, told me. The Betel has been used as a masticatory since very remote times. The sliced seed is wrapped in a leaf of *Piper Betel* and a little lime is added. The inspissated extract forms the Catechu or Cutch of commerce, a very astringent substance full of tannin. The Oil Palm of Tropical Africa is not indigenous in India. The kernels yield a white fat much used in soap making. Space forbids an account of the Coco-nut, which needs a book to itself, except to point out that Cocoa-nut is a misspelling. The word Coco is derived from the likeness of the Nut to the head of a monkey coco. Botanists must be grateful for the production of such a readable and accurate account of a family not less remarkable for its beauty than for its economic importance. The claims made on the wrapper are not in the least exaggerated and in order that they may be put in a more permanent form, they are reprinted here. "Many monographs have been written on particular groups of palms; this volume is the first comprehensive survey of the whole range of palms found in British India and Ceylon, including foreign species which are grown only under cultivation or for ornamental purposes. Indeed it is the great number of these introduced foreign palms, and of separate monographs dealing with them, that makes a survey of this type so necessary. The botanist will find the treatment of the subject scientific and exhaustive; but the needs of the amateur of palms, of the economist, and even of the anthropologist have not been over-looked, and there are full notes on the gardening, the commercial products, and the folklore of palms. There are 106 full-page plates and numerous figures in the text; also a comprehensive bibliography and index."

BOTANICAL ABSTRACTS. Vol. xv. Entries 1-5778. January-June 1926. Published by Williams & Wilkins Co., Baltimore. Editor-in-Chief, J. R. Schramm; Taxonomy Editor, J. M. Greenham.

BOWER, F. O., Sc.D., LL.D., F.R.S. THE FERNS (FILICALES). Vol. ii. THE EUSPORANGIATAE AND OTHER RELATIVELY PRIMITIVE FERNS. pp. 344, figs. 311-580. Cambridge University Press, 1926; 30/-. Emeritus-Professor Bower, with his well-known literary skill, quotes the suppliants of Euripides—

"On a far-looking tower I stood to watch
And three tribes I beheld, of war bands three."

He claims that in the first volume he established and detailed twelve criteria of comparison which enabled us to take our place on a tower of vision. Thence we may witness the phyletic advance. As the armies in the play were seen to be formed in three distinct columns, each moving independently, so also the three main phyla of Ferns, which our comparative study will disclose, may be held to have progressed independently in their evolutionary march, their separate movements being discernible by the observer from his point of vantage—each phylum taking its course; in fact the evolutionary movements are polyphyletic. The present volume deals with the evolutionary progression of earlier geological times. Nine pages are devoted to the Introduction. The Coenopteridaceae, first treated of, are all fossils of the Palaeozoic type and are distinct from any living Fern. Following them is the chapter on the Ophioglossaceae, which have living representatives including *Botrychium* with 34 species, the monotypic *Helminthostachys* and *Ophioglossum* with 43 species, as given in Christ's " Index " [This is a slip for Christensen's " Index Filicum "]. A very careful study of the anatomy and life-history, comparison, and phyletic arrangement is given. Then come the Marattiaceae, a still living family, then the Osmundaceae numbering 17 species, and next the Schizaeaceae, with 4 living genera and 118 species which are not represented in Britain. Marsiliaceae with 3 genera and 63 species, of which *Pilularia* is our British representative, follow. Gleicheniaceae, with 80 living species, is then similarly treated, followed by the tropical Matoniaceae with 3 existing species which complete the Simplices, of which a General Review is given in his usually masterly manner. The Hymenophyllaceae follow, each of its two genera being represented in Britain. *Hyemnophyllum* has 231 and *Trichomanes* 228 species. The Loesomaceae, with two genera, are followed by Dicksoniaceae, the Plagiogyriaceae, Protocyathaceae, and the Cyatheaceae, from which Dicksonieae have been separated. These include the great tree-ferns, *Alsophila excelsa* and *Cyathea medullata*, which attain a height of 60 to 80 feet. To these succeed the Dipteridaceae and then there is given a general reviw of the Primitive Ferns with maps showing their distributions and a phyletic scheme for the more primitive Filicales. It is a volume worthy of its distinguished author and of the University Press by which it has been issued.

British Association. Report of meeting at Oxford. pp. 473, 1926. President of Section K., Prof. F. O. Bower. Address, pp. 230-245. Unilateral Inheritance in *Ranunculus auricomus*. Prof. J. Percival on *Aegilops* × Wheat Hybrids. Wild Emmer (*Triticum dicoccoides*), Emmer (*T. dicoccum*), Macaroni Wheat (*T. durum*), and Bread Wheat (*T. vulgare*) with *Aegilops ovata* have been obtained. The offspring were intermediate. Prof. Dame Helen Gwynne Vaughan, D.B.E., and Dr Heslop Harrison on a discussion on Sex-determination in Plants, etc. A botanical excursion was made to Swinford Bridge, and another, conducted by Dr G. Claridge Druce, to the Berkshire Chalk Downs, the Commons of Greenham and Crookham, and the Kennet water meadows.

These afforded an opportunity of seeing some of the most interesting plants of the district. Another, and a joint, excursion conducted by Dr Druce, was to Bagley Wood near Oxford. The botanical papers were chiefly on physiological Botany. Lord Clinton presided over the Sub-section, Forestry. There was a large audience when Prof. J. W. Bews lectured on the Ecological Evolution of Angiospermous Woody Plants. The attendance at the Association was large and the address of the President, H.R.H. the Prince of Wales, which was given in the Sheldonian, was broadcasted through Britain as well as to the Town Hall and the Union Society's Hall.

BRITTON, N. LORD. Studies of West Indian Plants. 21 undescribed species from Cuba, 11 from Trinidad, and 1 from Porto Rico are noted. *Metastelma Freemani* N.E.Br. is from Balandra Bay, Trinidad.

BROWNE, Lady ISABEL M. P. Note on *Calamostachys tuberculata*, in New Phyt. 24, 305, 1925.

CALIFORNIA, UNIVERSITY OF. Publications. Vol. 13. Nos. 7, 8, 9, 10. In addition to those mentioned under the authors' names W. A. Setchell gives a Biography of T. S. and Mary Katherine Brandegee, notes on *Microdictyon*, and very able phytogeographical notes on Tahiti.

CAMBRIDGE. Delectus Seminum ex horto Cantabrigiensis Academicae. pp. 15, December 1926.

CAMPBELL, DOUGLAS HOUGHTON. AN OUTLINE OF PLANT GEOGRAPHY. pp. ix., 392. Macmillan & Co., London. 1926; 17/-. Even to those fortunate individuals who possess Drude's "Vegetation of the World" or Warming's "Oecology of Plants" this delightful volume from the pen of an American professor will be warmly welcomed. It is most clearly printed and profusely illustrated, and is produced with the excellency characteristic of the well-known publishers. Naturally stress is laid upon the American areas, but the author really gives a most able and comprehensive survey of the vegetation of the world and of its history. He frankly states that our knowledge of the vegetation of the earliest geological periods is almost nil. What evolves is that the earth's climate was formerly much more uniform than it is at present or how could magnolias, figs, walnuts and sequoias have been able to live in the latitude of Spitzbergen and Greenland as they did in the Eocene. This too was eminently true of the Carboniferous era when identical assemblies of plants were widespread over Western Europe, Central and Eastern Asia, South Africa, Eastern North America, and probably South America. Similar groups of floras were even more widely spread in Jurassic times and were known to range from Franz Josef Land, 82° N. to Graham Land, 63° S., the climate then being sub-tropical with heavy rainfall. But the reader is warned not to assume because tropical genera in a fossil state may be found, that a tropical or sub-tropical climate necessarily existed. He thinks we may assume that the ancesters of existing vegetation were very simple fresh-water algae. Even in the early Devonian formations the land plants have already attained a structure which implies a long series of intermediate forms between them and the ancestral algae. Then through the Cretaceous and Pliocene came a cooling-down which culminated in the great glaciation which has had so powerful an influence upon plant distribution, many species being frozen out, as for example, the magnolias and hickories in Europe, and thus Pleistocene glaciation was the greatest factor in the establishment of the temperate floras of the present day. The author goes on to discuss the existing factors in plant distribution, the subject of man and the plant world receiving adequate attention. Climatic Zones give the occasion for a luminous explanation and for introducing some excellent illustrations. The description of the North Temperate Zone is very readable, and brief allusions are made to the typical floras. Our British flora is rather summarily dismissed in a single page " but it can hardly be described as rich." The Mediteranean flora naturally requires greater space. There are pleasant photographs of Olives, Carobs, and Hollies in Majorca, of the Atlas Cedars and Date Palms in Algeria, of the wondrous view of Tree-ferns at Darjiling with the showy Kinchinjinga in the background, the gorge on the Yangtse river, the temple groves at Nikko; the American Elm on the Unadilla River, New York; a Cypress swamp in Florida, an alluvial swamp in Alabama, the forest of the Glacial Park, the desert vegetation of Mati, the Erythronium on Mount Ranier, the Redwood forest of Humboldt country in California, the Desert Mountain forest and Cactus of Arizona. These give some idea of the variation and of the beauty of vegetation. The Palaeotropics are also detailed with great fidelity, and we have views of the Baobab in Mombasa, the extraordinary *Welwitschia mirabilis* in Swakopmund, the rain forest of the Victoria Falls, the Banyan in the Botanical Garden at Calcutta, the Bamboos and Talipot Palm at Peradeniya, the Toddy Palm (*Borussa*) at Rangoon, the Rattan and Banyans at Buitenzorg, Java, the rain-forest in Sumatra, the edge of the Forest Mt. Salak, Java, the Alexandra Palm and Cedreae Toona (Cedar) in North Queensland, the forest and lake of Samoa, the magnificent gorge with *Aleurites* and *Gunnera* and the Tree-fern swamp in Hawaii. The Neo-tropical Regions include Mexico with views of its epiphytes (chiefly Bromeliads), the remarkable Sonoran desert vegetation in Western Mexico with *Idria columnaris*, the Tree Cactus of Libertad. South America is represented by views of a Brazilian tropical forest, the riparian forest in Surinam, the Groogroo Palm and jungle of Trinidad with the grand silk-cotton trees on the Savannah there, and the tree ferns and forest of the Jamaican Blue Mountains. What a vista they open out. In the South Temperate Zone as in South Africa there are views of the Karroo vegetation, which includes the Aloes on the Kopje near Beaufort West, the *Mesembryanthemum*, the aborescent *Euphorbia* near Durban, and the xerophytic vegetation near Ladysmith and the High Veldt of the Transvaal. Australia is illustrated by the splendid Bunya Pine (*Araucaria Bidwellii*), the Eucalyptus forest in Victoria, the coastal vegetation of Perth, the curious grass-trees (*Xanthorrhoea*) and coastal scenes of West Australia; New Zealand by a Kauri (Agathis) forest, Cordyline, Todea and Tree Ferns. The Tussock grass land of the South Island, the Giant Moss, *Dawsonia*, and the sub-alpine shrubs of that island are also shown, and there is a delightful picture of *Gentiana corymbifera* growing on a hill-side at 4500 feet. Then come the Argentine Pampas, the *Libocedrus* and Beech Woods of Chile, and a meadow-land of Patagonia. One may turn to any page and always find some note of interest or reference to some striking feature of plant occurrence. Would that one could ride on the magic carpet to see *in situ* what has been so vividly put before the reader in this volume.

Cane, Percy S. Modern Gardens. Edited by Geoffrey Holme and Shirley B. Wainwright. Special Winter Number of the Studio, 1926-7, pp. 24, with 166 pages of illustrations, eight being in colour. This charming volume, with such excellent illustrations of delightful gardens, will be a welcome gift to any recipient. The introduction gives much instruction in small space, the advice being practical and such as not to involve unnecessary expense. Necessarily such gardens as that at Westonbirt, of which illustrations are given, or the wonderful tour de force of Mr Hanbury's at Brockhurst, which is delightfully portrayed, are only available by the very rich, but there are many beautiful examples shown which are within the reach of a large number of horticulturists, and their formation would be a welcome relief from the many dull gardens which still exist. The examples shown, however, are not confined to Britain. There are some very pleasing pictures from America, France, Germany, Austria, Italy, Sweden, Denmark and Japan. The book is replete with delightful representations of these garden scenes, and their reproduction has been very skilfully carried out. The coloured views of the Brockhurst garden and that at Pangbourne are entrancing.

Chamberlain, Ch. J. Two new species of *Zamia—Z. monticola* and *Z. sylvatica* from Mexico in *Bot. Gazette* 218, 1926. Hybrids in Cycads, *Z. latiofoliolata* × *pumila*, *l.c.* 410, 1926.

Clusius. De L'Escluse. The four hundredth anniversary of his birth was celebrated on October 19th at the Pieterkirk at Leyden when Dr de Luit placed a wreath of flowers and pronounced the orison. De L'Escluse is said to have produced the first garden tulip. He visited England and recorded *Calluna vulgaris* and *Erica cinerea* from near Windsor.

Clarke, J., Margary, Ivan D., and Marshall, Richard. Report of the Phenological Observation in the British Isles, December 1923 to November 1924. Quart. Journ. of the Royal Meteorological Soc. Vol. v., n. 216, October 1925. The Notes on Trees and Shrubs (Tab. 8, p. 331) were made at St Michael's, Tenbury, Worcestershire, by Frederick on 90 species. The first day of the Elm flowering was—for *U. montana* the 88th, for *campestris* the 79th, for *suberosa* the 97th, and for *stricta* the 102nd. Owing to the uncertainty of the Elm nomenclature we are uncertain what "*campestris*" and "*suberosa*" really mean. Most English authors consider them synonymous (See *Camb. Brit. Fl.* ii., 94), but here there is a greater divergence in flowering, *i.e.*, 18 days, than there is between *montana* and "*campestris*" and *montana* and *stricta*. In *Camb. Brit. Fl.*, *campestris*—the English Elm, and *montana* are said to open their flowers in February or early March, *i.e.*, the 66th day. The year must have been abnormal, for the average of ten years given for the first flowering of *campestris* is the 54th. Apparently it is the latest Elm to ripen its fruits—the 132nd day against the other species, for which the 125th day is given. There is a discrepancy between these results and those given in the *Camb. Brit. Fl.*, which needs elucidating, and especially the correct identification of *suberosa*. I have records of flowers appearing on the Wych Elm in January and on the English Elm in February.

COLLINS, S. HOARE, M.Sc., and REDINGTON, GEORGE, M.Sc. PLANT PRODUCTS. Edition ii., pp. xiii., 262. Baillière, Tindall & Cox, London, 1926. As Mr Collins said in his preface to the first edition in 1918, the raw materials of agriculture are often the waste products of other industries, and the produce of agriculture again forms the raw material for other industries. In these pages an attempt is made "to pick up the story of those industrial waste products which are useful as fertilisers and carry it on through the soil and crops, until new products are available for industrial use. Among the many plant products which are obtained from the soil, food takes a high position as an industrial raw product since neither men nor horses could work without it." Starting with "The sun as the source of power" to obtain plant products—(1) radiation from the sun, (2) a water supply, (3) a supply of air, (4) fertilisers, and (5) correct condition of heat, chemical reaction, and bacterial development are needed, and these factors are well explained in the chapters treating of fertilisers. Among these sulphate of ammonia, which is now being extensively prepared in synthetic factories, is shown to increase the yield of wheat and other agricultural produce. Potatoes have an increased yield, due to the use of a cwt. of sulphate of ammonia costing 14/-, of £3, or £2 6/- profit per acre. Other fertilisers are mentioned. These include Wool-waste, Feather-waste, &c. Their use has led to the occurrence of a large number of alien plants in the fields dressed with shoddy waste near Byfleet and Pyrford in Surrey. These belong to the Nitrogenous series, but much help is given by the Phosphorus group—Basic Slag—which may contain as much as 40 of tricalcium phosphate with about 40% of lime. The influence of this on sour soils is very marked, and clover springs up in the tract where it has been used in a magical manner. The mineral phosphates include coprolites, which formerly were obtained in some quantity from Bedfordshire. Now a considerable supply comes from Florida. Coprolite contains about 75 to 80% of tricalcium phosphate. There are also the artificial super-phosphates, bone manure, and guano. The last is not only phosphatic but of a nitrogenous character. Then come the Potassium series, of which wood-ash may be taken as a type. That from Beech may contain as much as 16% of potash, Larch yielding 15%, and Oak 10%. In practice, it is farmyard manure which forms the most ready source of supply. The diminution of the number of horses kept in England explains the scarcity of Mushrooms, and ere long we shall have, in the main, to depend upon their artificial culture. But this is a diversion. Farmyard manures are of a complex nature. They are full of bacterial life. A micrococcus assists in reducing urea into ammonia carbonate, and by a series of very complex actions this is converted into many curious compounds. Very interesting details and useful advice are given on this subject and also on the treatment of sewage. Part II. is devoted to The Soil, and here is an immense amount of information of the highest value. The use of electricity in plant stimulation is not overlooked. As I once journeyed from Niagara to Toronto with the overhead electric wires along the tract, carrying the voltage from the generating station at the Falls to the city, one could not but notice the luxuriance of the grasses. One had to look twice at *Poa pratensis* or *trivialis* to be sure that they were correctly identified. Whether this luxuriance was due to the soil or to the wastage of volt-power is a question to be solved. A section is devoted to Photosynthesis and another to the Carbohydrates produced in crops, such as sugar, starch, and cereals. Of oil-bearing plants—Linseed, Cotton, Soya Bean, Coco-nuts, Rapeseed, and Castor Oil are treated. There is a chapter on miscellaneous plant products. These embrace Tea, Coffee, Cocoa, Tannin, Rubber, Tobacco, Indigo and Fruit. The final sections are devoted to Manuring Grass for Meat Production, the Foods fed to Beasts, and the Calorific Value of Foods. This volume, which is one of the Industrial Chemistry Series, is of real practical use and contains a large amount of valuable material. It deserves a wide circulation.

CONQUEST. A Monthly Magazine of Progress, Invention, and Discovery. Edited by T. Barton Kelly. Vol. vii., 1926. Yearly, 14/- post free. The March number contains an account of "The most remarkable plant I ever saw." Capt. Kingdon Ward, the distinguished and intrepid traveller in China and Burmah, chooses a Rumex eight feet high, of which hundreds grew together, visible a mile away like yellow candle flames against the dark moor. It grew at an altitude of 15,000 feet. Dr D. Thoday figures the Mangrove, *Brugiera gymnorrhiza*, in the mud of Salisbury Island, near Durban. Mr Alex. Hill mentions *Eucalyptus marginata*, the roots of which had penetrated through a cave till they had reached 120 feet below the earth's surface. Prof. Weiss figures an extraordinary Euphorbia—*multiceps*, from the Karroo Desert. Dr Dukinfield Scott considers the fossil *Asteroxylon* as the most remarkable from its age, it being among the oldest plants of which the structure is known. Although it is like the Lycopods, Psilotaceae and Ferns, it is distinct from each and unites in itself three genera, each at one time supposed to be distinct. Dr Rendle chooses the Climbing Sundew of Australia. On the British Association Meeting there we saw some beautiful examples of the Rainbow Plant, as it is called. The clear viscid drops of secretion on the leaves break up the sunlight so that miniature rainbows are seen in the shrubs up which it climbs. Prof. Yapp instanced the great Malayan Fern, *Lecanopteris carnosum*. In the mass of branches colonies of ants form a complicated system of galleries. *Epipogon* was chosen by the writer as the most remarkable British Plant. Prof. Maughan shows a remarkable fasciation of the stem of *Ranunculus sceleratus*, which was ten inches wide and bore hundreds of flowers. It came from the banks of the Itchen at Bitterne, S. Hants.

Curtis's Botanical Magazine. Edited by O. Stapf, Ph.D., F.R.S., published for the Royal Horticultural Society by B. Quaritch, London. Annual subscription, 63/- net. This volume is dedicated to that eminent horticulturist, Mr E. A. Bowles. We congratulate W. E. Trevithick and L. Snelling on their excellent drawings. Plate 9088 is of *Aconitum anglicum* Stapf who describes it as a species distinct from *A. Napellus*.

Danser, B. H. *Lamium hybridum* Vill. and *Lamium intermedium* Fr. ? Hybrids. Nederl. Kruid. Arch. Jaarg 407-413, 1925. Beitrag zur Kenntnis der Gattung Rumex. Nederl. Kruid. Arch. Jaarg 414, 1925. This includes notices of *R. salicifolius* with new sub-sps. *triangulivalvis* and *angustivalvis* with figures. The *salicifolius* of Britton & Brown is *triangulivalvis*. A variety of it, *nudivalvis*, is in the Edinburgh Botanic Gardens as *R. pauciflorus* Nutt. An account of *R. obtusifolius* and its varieties is given. The suggestion that priority of place means the replacement of *R. maritimus* by the name *R. persicarioides* L. is dealt with. Under *R. oboratus* Danser the British localities of Bristol (*Sandwith*), Hull (*Miss Cobbe*), and Glasgow (*Grierson*) are cited. *R. paraguayensis* Parodi has been found in Holland and Germany, and a hybrid of it with *maritimus* (*Jansenii*) is described. Others noted are *discriminans* (*oboratus* × *paraguayensis*), *Wachterianus* (*dentatus* × *paraguayensis*), *Goethartii* (*paraguayensis* × *salicifolius*), *Bontei* (*crispus* × *oboratus*), *adscendens* (*dumosus* × *salicifolius*) and *leptophyllus* (*fennicus* × *obtusifolius*. Prof. Danser has been at Buitenzorg, Java, for the greater part of the year.

Darnell, A. W. Winter Blossoms from the Outdoor Garden. A descriptive list of Exotic Trees, Shrubs and Herbaceous Plants that flower in the outdoor garden in the British Isles during the months of December, January and February. For the use of amateur gardeners. Alphabetically arranged. pp. xxiv., 335, 1926. L. Reeve & Co., London; 21/-. 24 plates, 8 of which are coloured. The Foreword is usefully devoted to the Propagation of Hardy Winter Flowering Plants, and some valuable advice is given on this subject. The nomenclature of the *Index*

Kewensis has been chosen, as it is "the one most frequently used in this country." He says "the rule of priority in generic and specific names is being rigidly enforced," but he does not seem to know of what are called "nomina conservanda" or the unwise attempt to increase the exceptions to that rule. The author believes the synonyms he cites are fairly complete, and he wisely follows the pre-war political divisions on the ground of its being more easy to locate the habitat of a species than if an atlas based on the decisions of the Treaty of Paris had been adopted. Three species of *Acacia* are given, *A. Baileyana* being figured; two species of *Adonis*, one the popular *A. verna*; two species of *Akebia*; *Alnus oregonia* and five Anemones. *A. apennina* is said to be naturalised fairly plentifully in Surrey, Beds, Berks, &c., a statement which hardly holds true of Berks. It might have been added that Middlesex has it very locally at Ken Wood. *A. vernalis* is well figured and *Arbutus Unedo* and *Andrachne* are described but the latter species grows also in Greece where it hybridises with *Unedo*. Among others, two species of *Buddleia* are mentioned, *B. crispa* being quite as hardy as *globosa*. *Cerastostigma Willmottianum*, which commemorates one of the best horticulturists, and the sweet-scented *Chimonanthes* are not forgotten. The very attractive *Chionodoxa* deservedly finds a place. The gorgeous *Clianthus puniceus* may be grown in the open in the south-west counties. Nine species of *Colchicum* are given, and eight species of *Corydalis* find a place (the oldest generic name, *Capnoides*, being tabooed by the Englerites). An account of the Glastonbury Thorn is given. Forty-eight species of *Crocus* are mentioned. To see them in their beauty and variety one ought to make friends with Mr Bowles and see them in his Middlesex garden. One wishes that Mr Darnell had placed the authors' names after the species. Eight Cyclamens help to swell the number, and what attractive plants they are! *Pyrus* (or *Cydonia* as it is here called) *japonica* is honoured with a good coloured plate. *Daphne Mezereum* has its meed of deserved praise. There are six Heaths, three Forsythias, and seven Snowdrops with a figure of *G. Elwesii*. The author considers *nivalis* to be native in Devon, Gloucester, and Warwick, but the evidence in its favour does not appear conclusive. Twelve Gentians are alluded to, also the Umbellifer, *Haquetia*. There are four species of *Hamamelis* and twelve Hellebores, of course including the splendid *H. corsicus*. The thirteen species of Iris include *I. Danfordiae*, described by Boissier for Cilicia. The striking *Kniphofia aloides* is strongly recommended as is *Lapageria rosea*. What a sight this plant is on a southern wall in Cornwall! *Leucojum vernum* (to which might be added *pulchellum*), the two blue species of *Lithospermum*, three Magnolias, seven Daffodils, two species of *Pieris*, *Polygala Chamaebuxus*, ten Primulas, eleven species of *Prunus*, four Lungworts, seventeen species of *Rhododendron*, two *Ribes*, fifteen Saxifrages, five Squills, the attractive *Sternbergia lutea*, five Tulips (one of them has a misprint from which the book is commendably free), three species of *Viburnum*, three Violets and *Zephyranthes versicolor* are among the plants which make up a wonderful winter garland, on the account of which we may warmly congratulate the author. Doubtless the book will come as a welcome gift to many a flower-lover in the dull winter time.

Davy, Joseph Burtt, Ph.D. Handbook of Conifers grown in the Arboretum, Bagley Wood, Oxford. pp. 45. Holywell Press, Oxford. Issued by the Department of Forestry, University of Oxford. The whole collection numbers 122 species and varieties. No capitals are used for the specific names. The Laws of Nomenclature are not invariably followed, nor is the Law of Priority. For example, *Larix europea* is employed instead of *L. decidua*, but *Larix Larix* would have cut the Gordian Knot. The Catalogue is well printed, and there is some very useful information given under each species. A map on a scale of thirty feet to an inch is given. Incidentally the planting of that area in Bagley has destroyed several interesting native species.

Davy, Joseph Burtt, Ph.D. A Manual of Flowering Plants and Ferns of the Transvaal with Swaziland, South Africa. With illustrations by W. E. Trevithick and Alice Bollon Davy. Part I. Pteridophyta to Bombaceae. pp. 272. Longmans, Green & Co., London, 1926; 15/-. Warm congratulations are offered to Dr Burtt Davy for the production of this very compact instalment of the Flora of a portion of South Africa which offers many points of special interest. In his preface the author alludes to the five years of unremunerative labour which it has involved. This emphasises the difficulties under which systematists at the present day labour. The demand for the publication is small, since there is no large number of people who care for this. In past centuries much help was given by the aristocracy and the clerical profession. In this way great works such as Morison's "Plantarum" and Plot's "Historias" were produced—but recently the classes in question have to retrench, and the easiest thing to retrench in is literary luxuries. To give up mustard in Lent calls for no great sacrifice. The new-rich rarely have the sense of responsibility or the wish to encourage science for its own sake. Even such a small thing as a yearly subscription to our Society, which does not represent the price of a theatre stall, is thought to be a thing one can easily do without. So one can very fully sympathise with Dr Burtt Davy in the not unnatural grumble he makes. However, the reader of this very compact book, which being printed on thin paper will, when completed, be easily carried in the pocket, will have no cause to grumble even though the price is necessarily high since it deals in a very thorough manner with the flora of a most interesting country. The area involved is only very slightly less than that of the British Isles 117,128 against 121,633 square miles. He divides it for botanical purposes into five provinces. It contains about 4500 species, double that of the British Isles. The sequence (and this is the only point in which one differs from the author) is not that of Bentham and Hooker. It would seem to have been better to follow the arrangement at the Kew herbarium and that of the already published colonial floras. In saying this one recognises that the natural sequence is at present in the melting pot. There is a very useful introductory chapter with excellent hints on plant collecting, and a copious glossary of 22 pages. A description of the new species and varieties, which number 131, is also included in a separate chapter. The arrangement, of which we have already spoken, begins with the Filicales, of which 146 are included. There are 11 Gymnosperms, and 780 Angiosperms, a total of 937, of which 102 are alien. These are comprised in 224 genera. Useful analytical keys to the groups and families are given. These occupy 16 pages. For the Ferns Engler's sequence in the "Syllabus" is followed. We are glad to see *Dryopteris* is used instead of *Lastrea*, &c. *Pteridium* is employed but it has been recently shown that Newman's *Eupteris* is the more correct name. Then directly following the Equisetaceae comes Ranunculaceae of which only four Buttercups appear to grow in the area. *Drouetii* is the only British one mentioned. *Nasturtium* is used, and in that has official sanction, but *Radicula* is unmistakably the older name. Gardeners still use *Nasturtium* for the *Tropaeolum*, the latter a Linnean invention which early excited opposition. We notice that there are 22 species of *Polygala*, not one of them British. *Agrostemma* is kept up. The family name Ficoidaceae, following N. E. Brown, is used. Others prefer Aizoaceae. It seems extraordinary to find Polygonaceae following so closely in the wake. One is tempted to ask what is *tomentosum* Willd.? It is satisfactory to find that the correct dates for *Rumex conglomeratus* 1770 and *glomeratus* 1771 are given. They were misquoted in "The Cambridge British Flora." The Index is to the Families only. Parts II. and III. (to be issued) will complete the Dicotyledons, and Part IV. the Monocotyledons. The latter will have a general index to the four parts. We anxiously await the completion of this important contribution to the flora of the Transvaal, and we are sure that it will be warmly welcomed by South African botanists. Its merits will soon be recognised by a much wider circle, and we trust it will sell in sufficient numbers to avoid a serious pecuniary loss falling upon its industrious author.

DEVONSHIRE. Seventeenth Botany Report, by Miss C. E. Larter. Trans. Dev. Ass., Vol. lvii., 75-89, 1925. Includes *Geranium nodosum* and *Fragaria moschata* from E. Buckland, several varieties of *Rosa systyla* and other interesting forms including a nov. var. of *R. dumetorum* = var. *Saveryi* Wolley-Dod. *Pinguicula vulgaris* appeared at Ilsington in 1925. It is greatly to be hoped that some one will be found who will complete a flora of this large and interesting county.

DRUCE, G. CLARIDGE. THE FLORA OF BUCKINGHAMSHIRE. pp. cxxviii., 437. T. Buncle & Co., Arbroath, 1926; 25/-. The reviewer's task is by no means an enviable one, in any case. If he avoids the Charybdis of fulsome flattery on the one hand, he may be wrecked on the Scylla of hyper-criticism on the other hand, and vice versa. In the present instance, however, he fears that even should he steer clear of both these dangers, he may yet listen to the "call of the wild," deviate from his intended course of reviewing a book, and run aground in attempting to revel in its Botany! Before attempting to deal with the text, I cannot refrain from congratulating the publishers on the excellent manner in which it is presented. The clearness, delicacy and beauty of the type are so admirably correlated with almost ideal spacing, arrangement, and wide margins, that to read the book is a sheer delight. Diligent search only succeeded in discovering one error in pagination (lxxvli.), and that appealed more to my sense of humour—most saving grace —than to that of criticism. Turning to the text, I was at once impressed by the monumental character of the work accomplished by Dr Druce, in completing this third volume of the Flora of the Upper Thames. The laborious nature of the work involved in collecting, verifying and arranging such an enormous mass of data, will at once be recognised by every reader of this charming work. We are lost in wonder at the author's indomitable energy, amazing versatility, and profound scientific acumen—especially when we remember his extensive commitments in other directions. In compiling the Flora of Buckinghamshire, Dr Druce has avoided two of the most common faults found in some existing floras. The volume is not a mere list of plant species, nor does it include any of the vacuous verbiage which disfigures some previous works, and has prevented the publication of at least one otherwise valuable modern flora. In a county so rich in historical associations as Buckinghamshire we expect some reference to these, in any account of its vegetation, and Dr Druce is particularly happy, both as to the character and the extent, of his historical allusions. The Introduction is admirably conceived and very concisely and clearly expressed. The Geology of the county receives excellent and adequate treatment, while the various drainage systems into which the county is divided are clearly defined and separately described in a delightfully picturesque manner. Particularly interesting and informative—in the writer's view— is the large amount of valuable ecological observation which permeates the whole of the Introduction. If all British systematists would recognise that, apart from correlation with ecology, their work is relatively of little value, we should make a much greater, and far more valuable contribution to the sum of human knowledge. Incidentally, the absence of Saltmarsh, Sand Dune, Seashore, Mountain, Sub-alpine Moor, Peat-bog and Lake from the county, naturally limits the list of species, and is at once noticed by the botanist to whom these delectable habitats are " household words." More to the point, however, is the omission of any special reference to Rainfall, Sunshine, prevalent Winds and all that is embraced in the term Climatology. This, of course, may be obtained from other sources, but for future and comparative reference would have been an added attraction to the work under notice. With regard to the omission of the Bryophyta, Lichenes, Fungi, and Fresh-water Algae, I am in entire agreement with the author. Any attempt to deal adequately with these would have indefinitely delayed the publication of the volume and doubled its cost of production. In my own judgment they should not in any case be included unless each is in the hands of an acknowledged authority, and these are few in number. Not every county possesses a West, a Wheldon, a Wilson, or a Watson! This review is necessarily brief, as I am inordinately busy in other directions, but I felt that it would be unpardonable for the Members of the Society to allow the current *Report* to be issued without some special reference to so outstanding an achievement as that of Dr Druce in completing a third county flora of such exceptional excellence. While I may have succeeded to some extent in avoiding prolixity and hyper-criticism in this short review, I am conscious that in my unfortunate choice of language, I have quite failed to adequately express my high appreciation of the work before me.—W. H. Pearsall.

Druce, G. Claridge. The Botany of the Upper Thames in "The Natural History of the Oxford District." Edited by J. J. Walker. pp. 336. Prepared for the Members of the British Association of which Dr Druce was a Vice-President. Oxford University Press, 1926. Botany, pp. 72-127. In this book the author has given the most prominent features of the Botany of the Upper Thames and has prepared an estimate of the flora of the three counties of which it consists, viz., Natives, 997; Denizens, 52; Colonists, 79; and Aliens, 426 species, a total of 1554, besides about 600 varieties and 100 hybrids. The list of the rarer species includes *Ajuga genevensis* and *Stachys germanica* in practically their only British habitats (the former is alien in Cornwall), *Campanula persicifolia*, *Potamogeton Drucei*, *Apium repens*, *Epipogon*, *Orchis Simia*, *Danaa cornubiensis*, *Carum Bulbocastanum*, *Muscari* and *Althaea hirsuta*. *Aconitum anglicum*, *Thlaspi perfoliatum*, *Iberis amara*, *Viola stagnina*, *V. lactea*, *V. epipsila*, *Silene conica*, *Cerastium pumilum*, *Elatine hexandra*, *E. Hydropiper*, *Hypericum Desetangii*, *Epilobium Lamyi*, *Hieracium surrejanum*, *H. praealtum*, *Sonchus palustris*, *Campanula patula*, *Gentiana germanica*, *G. praecox*, *Nymphoides*, *Cynoglossum montanum*, *Salvia pratensis*, *Prunella laciniata*, *Teucrium Scordium*, *Illecebrum*, *Asarum*, *Aristolochia*, *Daphne Mezereum*, *Ulmus Plotii*, *Stratiotes*, *Orchis hircina*, *O. militaris*, *Herminium*, *Crocus albiflorus*, *Lilium Martagon*, *Damasonium*, *Carex elongata*, *C. paradoxa*, *C. tomentosa*, *C. montana*, *Ornithogalum pyrenaicum*, *Apera interrupta*, *Poa irrigata*, *Festuca heterophylla*, and *Bromus interruptus* also occur. The author groups his remarks under heads (1) the Aquatic or Lacustral species and their homes; (2) the Paludals; (3) the Pascuals; (4) the Rupestrals (very poorly represented); (5) the Sylvestrals, whose abundance is an evidence of the woodland areas that once existed and are still fairly well represented; (6) the Agrestals; and (7) the Adventives. A slight sketch of Botany in Oxford since the foundation of the Botanic Gardens in 1621 by Henry Danvers and of the Herbarium, as well as a Bibliography, are supplied. The Handbook was so much appreciated by the Members of the British Association, especially Section K, that the Clarendon Press have now issued it for the general public.

Druce, G. Claridge. The Victoria County History of Huntingdonshire. Edited by W. Page & Granville Proby, M.A. Part II. Botany, by G. Claridge Druce. pp. 29-80, 1926. The St Catherine Press.

Stamford Street, Waterloo, S.E. The Botany separates. 10/- each. In this compact treatment of the Botany of the small county of Huntingdon Dr Druce has endeavoured to show the salient features and to give the localities of the plants recorded for the county. It is not half as large as Northants or Cambridgeshire. The number of species, so far as at present ascertained, are:—

	Northants.	Cambridge.	Bedford.	Huntingdon.
Acreage, ...	641,992	549,723	298.494	234,218
Native Species, ...	892	892	763	757
Denizens and Colonists,	85	85	85	133
Dubious, ...	(12)	...	...	(14)
	977	977	848	890

Northants has also 42 adventive species and Bedfordshire many which are not included in the above numbers, whereas Cambridge and Hunts are credited with all that have been reported. The standard of species in these county lists is not uniform. A large number in the Cambridge list are extinct species. Bearing this in mind there is no doubt that Cambridge has not only more rare and interesting species but the larger flora, in part due to the presence of the Chalk. The river drainage of Huntingdon is wholly in the Ouse basin, but the county is divided for botanical purposes into the Nene and the Ouse districts. The geology and Fenland are shortly described, and of the latter a vivid picture of the old fenland is given before drainage had converted so much of it into rich arable land. A botanical history of the county is given beginning with John Ray and sketches of the lives of the Rev. Miles J. Berkeley, Rev. W. W. Newbould, Canon Paley, and Alfred Fryer are given. To the last-mentioned the county is specially indebted for his study of the fenland flora to which he added many species. In later times the Revs. E. F. and W. R. Linton added some species, and Mr Edward W. Hunnybun drew many of its plants for the unfinished "Cambridge Flora." The Marchioness of Huntly also painted many of its plants when she lived at Orton Longueville, where her herbarium is still preserved. A detailed comparison of the ingredients of the four counties mentioned is given, and then follows a list of its species with localities. The county has *Juncoides pallescens*, a plant practically confined to it, and other rarities include *Viola montana*, *V. stagnina* and many hybrids, *Melampyrum cristatum*, *Euphorbia Lathyrus* (native), *Trifolium ochroleucum*, *Potamogeton fluitans*, *P. Billupsii*, *P. varians*, *P. falcatus*, *P. coriaceus*, *P. involutus*, *P. decipiens*, *P. panormitanus*, *P. trichoides*, *Narciscus*, *Myrica Gale*, *Calamagrostis canescens*, *Gastridium*, *Nitella flexilis*, var. *Fryeri*, *Tolypella intricata*, &c. This is the first time in which the Botany of the County has been treated as a whole. Much still remains to be done in working out the distribution of the various plants. The author's own investigations started in 1874, and he has been enabled to make many additions to its flora.

Duncan, J. B. A Census Catalogue of British Mosses. 2nd Edition. pp. 66, 1926. Martin's Printing Works, Ltd., Berwick-on-Tweed; 2/-; 2/6 Interleaved, of W. R. Sherrin, A.L.S., South London Botanical Institute, 323 Norwood Road, London, S.E.24. Arranged according to Dixon & Jameson's "Student's Handbook of British Mosses," 1924. 622 species, included in 115 genera, are dealt with in a neatly printed and carefully compiled Catalogue in which colour forms, forms and sub-forms are wisely omitted.

Elliston-Wright, F. R. Braunton: a few Nature Notes with Lists of the Flora, Macro-Lepidoptera and Birds known to occur in the District. A. Barnes, Barnstaple, 1926. This forms a very pleasing description of a rich and charming country, cheerfully written and brightened with many well drawn figures. It will form a useful pocket companion for those nature-lovers who may explore that rich area. There are precise descriptions of the Sands and of the plants which occur there. As he says, the Bog Pimpernel produces sheets of colour which may be seen at a distance. A clear description of one of Braunton's treasures, *Teucrium Scordium* L., is given, as well as figures showing the early and later flowers. The author says of its clothing of downy hairs that they form a great protection for loss of moisture. The Latin names are not always the same in the text and in the more detailed list—*Chlora* is used in one and *Blackstonia* in the other. We are sorry to see the untenable *Erythraea* is chosen. The pollination of *Helleborine palustris* (*Epipactis*) is well illustrated and, of course, there is a figure of *Scirpus Holoschoenus*. There is a map given on the scale of 1 mile to the inch.

Fiori, Adriano. Nuova Flora Analitica d'Italia. Vol. i., pp. 944, tt. 12, 1923-5. This, following Engler, contains the Filices, Coniferae, &c., as far as the Leguminiferous genus, *Vigna*. The Male Fern is (contrary to Christensen) made a *Polystichum*. *Arundo* is chosen for *Phragmites*. *Bromus unioloides* is called *Ceratochloa* and there are many other changes. Vol. ii., fasc. i., pp. 1-160, continues to the Malvaceae.

Gardeners' Chronicle, 1926. 6d weekly. Capt. Kingdon Ward continues his article on his eighth expedition in Asia. His winter quarters in the high altitudes look anything but attractive. There were 50° of frost, and only yak dung for fuel at 15,000 feet elevation. His account is vivid and graphic and it is illustrated with excellent photographs. Mr N. E. Brown continues his exhaustive study of Mesembryanthemum, and he describes the numerous new genera which he has carved out of the Linnean genus. The Early History of the Potato, by T. P. M'Intosh. It is stated that the first mention of the Potato in literature is that given by Cieca in "Cronica de Peru," published in Seville in 1553. An account of the Rev. Hilderic Friend, with a portrait, is given on p. 57. He is the authority on British Annelids, but has written on Flowers and Flower Lore and a Glossary of Devonshire Plant

Names. At one time he lived close to the border of Oxfordshire whence he sent me a hybrid *Hypericum*. On p. 65 he contributes a series of well written papers on Classical and Legendary Gardens. Capt. Kingdon Ward, p. 252, describes the genus *Meconopsis*. The Botanic Gardens at Tjibodas, Java, are described and illustrated on p. 270. They are situated at an elevation of 4500 feet, and are about 60 miles from Buitenzorg. They have a large variety of tropical treasures and possess a fine natural waterfall. Native Plants as a Guide to Soil and Tree Planting, p. 382. The Conception of a Species, by G. C. Hurst, ii., p. 172. *Viola gracilis*, by Lieut.-Col. E. Todd. This was first found by Sibthorp on Mount Olympus. David Douglas, the great explorer of N.W. America. A delightful account is given of him, ii., p. 250, by Neville Cooper. Lilies in the United States. There is an illustration of a field of 10,000 *Lilium regale* at Greenbrae, Seattle. The British Herbal of 1743. There is a note on this rare work by S. Savage, ii., p. 270. Cintra, Montserrat, ii., p. 330. The Hill Cherry of Japan, *Prunus mutabilis*, ii., 331. *Quercus Cerris* L., seeding at Busbridge, Surrey, ii., p. 332. An Appreciation, with portraits, of Mr W. H. Stansfield, a prominent horticulturist, is given on p. 342. *Rubus nutkanus* in Alaska, with a good picture of a fine flowering bush, ii., p. 371. *Phormium tenax*, with figures, ii. p. 387. Twenty days in a Botanist's Paradise—the Klinghardt Mountains in Africa, by Prof. K. Kuiter, ii., pp. 431 and 452. Several important new species were discovered. Autumnal Colour, by H. E. Armstrong, F.R.S.

GENEVE, BULLETIN SOC. BOTANIQUE DE. Editor: R. Chodat. Vol. xvii., pp. 390, tt. 187, 1925; 15 frs. Includes, among others, papers by G. Beauverd, on Comptes rendus des Séances; Polymorphism of *Nigritella nigra* and *Listera*. *Listera ovata*, var. or sub-sp. *eburneo-rosea*, f. *brachyglossa* Peterm., f. *platyglossa* Peterm., lusus *alternifolia*, *trifoliata*, var. *longifolia* Beauv. and *L. cordata*, var. *chlorantha* Beauv. are described with Key for the species of this genus. He also describes a new *Silene* from Le Lauteret, viz., *S. delphinensis*. R. Chodat & Miss K. Massey. Hybrids of *Sempervivum*, *Galium Mollugo* × *verum* with figures of leaf sections, *Medicago sativa* × *Falcata*, *Viola*, *Pedicularis*, *Dianthus* and *Colchicum*. M. N. Porta. On the possible hybridity of *Sedum sexangulare*—*S. acre* × *reflexum*. This awaits further research—and so far one feels reluctant to accept this conclusion which, as Prof. Chodat suggests, requires chromosome examination. H. Romieux & K. H. Zahn, *Hieracium* nouveaux de Suisse et de France. Calvert Wilson, Pollination of *Lilium Martagon* by Lepidoptera. R. Chodat & L. Relifont. La Végétation du Paraguay et Plantes Nouvelles ou peu connues de L'Entremont (Valais), with many illustrations. *Orchis Simia* × *Aceras anthropophora* = × *O. Bergoni* in France and Switzerland, with figure. Vol. xviii., fasc. i; 9 frs. G. Bonati, Madagascar Scrophulariaceae. 11 new species of *Hysanthes*, 3 new *Radainae*, as well as *Leucosalpa Perrieri*, 2 species of *Halleria* and 3 new *Torenia*. G. Beauverd, Plants of Chambéry. F. Chodat, Recherches Expérimentales sur la Mutation chez les Champignons. The son of the distinguished Botanist is to be highly congratulated on this able paper of over 100 pages. K. H. Zahn & H. Romieux, *Festuca Camuscana* St Y.

Gilbert White Fellowship. Subscription, 7/6. Secretaries, Miss W. M. Dunton, 14 Albert Mansions, Battersea Park, S.W.11, and G. B. Fox, 45 Stanwick Mansions, W. Kensington, W.14. President, Sir Daniel Hall, K.C.B. Many excursions and meetings were held during the year.

Hall, Sir Daniel. The Literature of the Country-side in the School. A paper read at a meeting of the Gilbert White Fellowship on November 1, 1924. Pamphlet No. 4, pp. 16, 1926.

Hitchcock, A. S. North American Species of *Stipa*. Contrib. U.S. Nat. Herb. 24. pp. 251-262, 1925. Describes 40 species, 5 of which are new. Synopsis of South American species of *Stipa*. *l.c.* 263-289, 1925. Describes 89 species, of which 19 are new.

Holman, Richard M., & Brubaker, Florence. On the Longevity of Pollen. Univ. California Publ. pp. 178-204, 1926. The pollen of the Primulaceae has the longest life. Then come the Leguminosae, Rosaceae and Saxifragaceae. In Graminaceae the pollen in either dry air or humid air lasts one day only. Hay fever victims will scarcely credit this. That of Salicaceae lives for 21 days. By artificial means the longevity of pollen of *Listera cordata* has been lengthened to 164 days, and that of *Typha latifolia* to almost a year. This was stored over fused calcium chloride.

Honduras, The Handbook of. Comprising Historical, Statistical and General Information concerning the Colony. Compiled by Monrad Sigfrid Metzgen and Henry Edney Conrad Cain, under the Directorship of H.E. Sir Eyre Hutson, K.C.M.G. Published by the Crown Agency for the Colonies. pp. 461, with map, and 31 illustrations. London, 1925. There is an excellent Chronological Table. Honduras was discovered by Columbus on July 10, 1447. It is celebrated for its Logwood—*Haematoxylon campechianum*. Even as far back as 1671 Belize (a name now restricted to its capital) was a prosperous settlement. It was ceded to the British in 1670 by the Spanish. The colony has streams of great beauty, and its highest part, Victoria Peak, is over 3700 feet above sea level. There are a large number of islands. The vegetation is such as a tropical and sub-tropical area afford. The Breadfruit tree fruits in great luxuriance, and the native flora shows superb colouring. Epiphytal and terrestrial orchids are well represented. A large number of economic plants are cultivated. The evergreen rain forests have Mahogany (*Swietenia macrophylla*) which is the best in the world, and Ironwood (*Laplacea Haematoxylon*). The Grugru Palm occurs in the Broken Belts. Sapodilla, which gives employment to such a large number of our American cousins, as it affords " chewing gum," Castillea rubber, Cacao and

Vanilla are indigenous. The Honduras *Cedrus* and its wood are avoided by insects. Logwood, already alluded to, and Rose Wood (*Dalbergia latifolia*) are beautiful woods. The Calabash (*Calophyllum Calaba*) gives a good and durable timber, and its curious fruits have seeds yielding a good fixed oil. The woodlands are extensive and very varied. Silk-grass promises well for affording a strong silky fibre. This is an excellent handbook of a colony which is none too accessible.

HORTICULTURAL SOCIETY, THE JOURNAL OF THE ROYAL. Edited by F. J. Chittenden. Vol. 51, pl. 2, pp. 177-352. Vincent Square, Westminster, S.W.1. Annual Subscription, 7/6; Fellows, one guinea. Memoir of the late Secretary, William Rickatson Dykes, with portrait and an appreciation of his work on Irises by George Yeld, M.A., V.M.H. (see *Rep. B.E.C.* 846, 1925). An account of The New Hall, by J. Murray Easton, A.R.I.B.A., with illustrations. Taxaceae at Aldenham and Kew, by the Hon. Vivian Gibbs. Despite the popular belief that our soldiers were armed with Bows made from English Yew, he quotes Drayton's poem on the battle of Agincourt where the English Archers are described as "armed with Spanish Yew so strong," the Yew being imported from the Pyrenees. Even in Queen Elizabeth's time nearly 6/8 was the price paid for foreign Yew of the best sort as compared with 2/- for the coarser sort, that being English Yew. So another illusion is dispelled. Mr Gibbs does not for one moment connect the presence of the Yew in churchyards with any association of Druidical stones or altars. That their presence there is of very ancient date is evidenced by the Geraldus Cambrensis in 1184, which records they were very frequent in Irish cemeteries. He discusses the duration of life of the Yew and thinks that its longevity has been greatly exaggerated, but he believes it may last longer than the oak. Its use in topiary work is mentioned, and the well-known examples at Levens, Packwood House and Elvaston Castle are mentioned. He recommends its use in woodlands. The Yew is diœcious, but once in a way a female branch will be found on a male tree. He alludes to a very old tree in Buckland Churchyard which was moved for 80 yards in 1880 to admit of the enlargement of the church. It bore its removal well, although the tree was reported to be the one mentioned in Domesday Book. He alludes to the wonderful old Yews growing on Mickleham Downs near Leatherhead and also those at Kingley Vale near Goodwood. Some exceed 15 ft. 4 in. in girth and are possibly about 500 years old. There is an example of yew panelling at Batsford in Gloucestershire which was put up by the late Lord Redesdale. Many varieties are mentioned, including *Dorastoni* Carrière. Of this and of several others, figures are given. There is a very good one of *fastigiata*, of which the female plant only is known. The whole article is excellent and forms a most valuable article. G. Fox Wilson gives a contribution from the Wisley Laboratory on Pollination in Orchids with many beautiful illustrations. Major A. A. Smith Dorrien contributes a paper on Flower-growing for Market in the Isles of Scilly since the Great War. Mr C. Eley writes on Roadside Planting. Sir W. Lawrence, Bart., discusses Virtuosity in Vegetables, and a wide range is described. A schoolboy's illusion is shattered when we are told that Sir Walter Raleigh, who was believed to have introduced the potato, never visited Virginia. That country did not even grow the potato in the 16th century. Some little-known vegetables are descanted on by Mr E. Beckett. They include, among many others, *Aralia cordata* (when blanched the stems are said to have a delicate piny flavour), *Stachys tuberifera* or *Sieboldii*, the Aubergine, Bamboo Tips, Celeriac, the bulbous root Chervil, edible *Hibiscus* and *Oxalis tuberosa*. Genetics of the Wisley Blue Primrose by B. Buxton, and New Zealand Veronicas by H. W. Lawton are other readable articles. We are glad to see that Miss C. G. Trower has for the third time received the Grenfell Medal for her beautiful paintings of British plants.

HUME, HAROLD. THE CULTIVATION OF CITRUS FRUITS. pp. xx., 561, tt. 237, 1926. Macmillan & Co., Ltd., London; 21/-. This volume is one of the eminently valuable Rural Science Series which is edited by the great American authority on Horticulture, Dr L. H. Bailey. No one more qualified for the task of treating of *Citrus* culture than Mr Hume, the author of a similar work published in 1904, could be found as his long and varied experience are of the utmost value. As he says, the last twenty years have seen the industry standardised in every department. *Citrus* culture has become a great specialised commercial industry and holdings of hundreds of thousands of acres are common. Gone are the numerous varieties that made up the planting-lists of that period; in their stead a brief list of fruits remains, sufficient to cover the harvest season. Gone are the individually operated and crudely equipped packing houses. They have been replaced by community packing-plants in which fruits are handled in large quantities. This has made for greater uniformity in the product marketed and better returns to the grower. There is no fruit industry in which a husbandman may engage that calls for greater special technical knowledge if success is to be assured. And so this volume has been prepared to replace the older one issued in 1904. Nature has ordained that *Citrus* culture in the British Isles is negligible, but to our colonies and dependencies the subject has a great commercial interest. We, in these islands, as simply consumers, should, however, have some knowledge of the sources of supply and of the varieties of *Citrus* which come in. For instance, the recent use and growing popularity of Grape Fruit or the Dutch Pomelo, the name used by the United States Department of Agriculture, owes its English popular name from the fruit not being borne singly but in grape-like clusters of from three or four to eighteen. The botanical name used by Mr Hume is *Citrus paradisi* Macf., a native probably of South Eastern China, though it may have originated as a seedling-sport in the West Indies. The Grape Fruit is allied to the Shaddock or Pummelo. The Pummelo, which is yielded by *Citrus maxima* Merrill (the *C. decumana* of some authors), is a native of Malay and Polynesia. In the United States the popularity of the Grape Fruit is also of recent origin: indeed it is only since 1885 that it has become a commercial fruit. About the beginning of the last century Don Phillipe, a Spanish nobleman, settled in Florida and planted some Grape Fruits. One of these is still living, and a photograph of it and one of its seedlings in the Davy Grove, Pinellas County, Florida, is given. It has a branch-spread of more than 60 feet. Cuba and California also supply Grape Fruit. A hybrid with the Tangerine (Tangelos) has been produced, and there are many varieties of which good figures are supplied. The book has thirty-one chapters and 237 figures. The History of the *Citrus* is given. China or Cochin China is the natural home of the Orange, whence it reached India, Japan, Europe, Africa, America, and Australia. America, till recent times, depended upon Italy for its Lemons. The *Citrus* crops of California alone afforded in 1923-24 the enormous quantity of 24,292,800 boxes, of which 6,100,000 boxes were Lemons, Florida coming in a good second with its 20,399,614 cases, but it is stated that the prices realised did not, in many instances, cover the cost of production. With a tree of such a long history of cultivation as the Orange, the wild stock of which, like that of the Barley, has never been discovered, there is an immense variation. More recently the Linnean genus, *Citrus*, has been split into three (1) the true *Citrus*, with one leaflet and an eight-celled ovary; (2) *Fortunella*, with a 3-6 celled ovary, which includes the Kumqual brought to England by Fortune in 1846, and (3) the prickly orange, *Poncirus*, a genus first separated by Rafinesque, which has three deciduous leaflets, the *Citrus trifoliata* of Linnaeus—*P. trifoliata* Raf., also a native of China. The King Orange is *Citrus nobilis* Lour., and of this the well-known Tangerine is variety *deliciosa*. The Seville sour orange or Bijarradi is *C. Aurantium*. An excellent and exhaustive account of the numerous commercial varieties is given. The Citrons (*C. medica*) are also fully treated of as well as the Limes (*C. aurantifolia*). The methods of Breeding New Varieties receive due attention. Other chapters deal with Judging, Propagation of *Citrus*-tree Stocks, Soils for *Citrus* groves, Location of *Citrus* groves, Preparation for Planting and Cultivation of *Citrus* groves and their Cover Crops (which include *Desmodium tortuosum* and *Stizolobium*, species of *Crotalaria* and *Vigna sinensis*), Fertilisers, Irrigation of *Citrus* groves, Pruning, Packing and Handling, Injurious Insects and Diseases and their Treatment complete a handbook that is a *vade mecum* of information and an absolutely necessary work to any one who wishes to cultivate the Apples of the Hesperides. As is the custom of the great firm of publishers who have produced this work, it is eminently attractive in its type, illustrations and arrangement.

HUTCHINSON, J., F.L.S. THE FAMILIES OF FLOWERING PLANTS. I. Dicotyledons. Arranged according to a new system based on their probable Phylogeny. Illustrations by W. E. Trevithick and the Author. pp. viii., 328, 1926. Macmillan & Co., London; 20/-. This very able contribution to Systematic Botany is appropriately dedicated to the memory of the authors of the "Genera Plantarum," George Bentham and Joseph Dalton Hooker, the dedication being framed with beautifully drawn flowers of some of the more important Natural Families divided into the two groups—herbaceous and arborescent. The Foreword is written by the Director of Kew, Dr A. W. Hill, who says the author "has returned wisely, as I think, to the position adopted by the authors of the 'Genera Plantarum' since he regards the Ranales on the one hand and the Magnoliales on the other as starting points of his phylogenetic arrangement." The author, in his very useful preface, regrets that the classical "Genera Plantarum" of Bentham and Hooker has never been made available to English readers in a popular form. The general sequence, however, appeared in a translation from the French work of Le Maout & Decaisne, edited by Hooker, now long out of print. Had these distinguished authors seen fit to issue an English translation, illustrated by the gifted botanical artist, Walter Fitch, it is probable that that work would have held the field. As it is, it has largely been superseded by "Die Natürliche Pflanzenfamilien" of Engler and Prantl, published in German and copiously illustrated. Hutchinson gives a brief account of the systems of Classification—dwelling especially on those just mentioned and on the general principles adopted for the classification of Flowering Plants. In tabular form the summaries are ably shown and the fundamental differences between the systems of Bentham and Hooker, of Engler and Prantl, and of his own are clearly contrasted. A very useful Key to the Families of Dicotyledons is appended. A Key to the "Genera Plantarum" was made by F. Thonner in 1895, but it has been long out of print. This one is entirely independent of that, and is made on somewhat different lines. By its aid and the use of an ordinary pocket lens it will not be impossible for an intelligent person with only a slight knowledge of botany to allocate to their families most of the plants he may meet with. Hutchinson commences with the Magnoliales. The diagnoses of the Families are clear and precise and are beautifully illustrated by himself and Trevithick. Maps of the distribution are also supplied. Following this group come the Ranales, which include Ceratophyllaceae, followed by Nympheaceae and Berberidaceae. Then, preceding the Poppies, which is the English order, come the Aristolochiaceae (one is only alluding to the British Families). We may add that the Labiatae Family, No. 264, is the last family to be dealt with, Salicaceae being 217. This arrangement, while showing wide discrepancies from either Bentham and Hooker or Engler and Prantl, has a much closer tendency towards the former. This highly technical and important work deserves very careful criticism and attention from high authority. Dr Parkin, therefore, has been induced to give his views in a separate article which will be found in this *Report*. It only remains to be said how excellently the publishers have produced this highly original work. Botanists throughout the world should be very grateful for having it supplied in so compact and agreeable a form at a reasonable price. The author will receive not only criticism, which he invites, but, we hope, due recognition for his clever, laborious and original research.

INDEX KEWENSIS PLANTARUM PHANEROGAMARUM. Supplementum Sextum Nomina et Synonyma omnium Generum et Specierum ab initio anni MDCCCCXV. ad finem MDCCCCXX. nonnulla etiam antea edita complectens ductu et consilio A. W. Hill confecerunt Herbarii Horti Regii Botanici Kewensis Curatores. Oxonii e preto Clarendoniano MDCCCCXXV.; 70/-. In the *Report* 342, 1921, the Fifth Supplement of this very important work was reviewed at considerable length. Now we have the Sixth Supplement dealing with the plants of the next five years, of which not all are necessarily new species since, for instance, the numerous reductions of L. Krause are each counted. The number of separate entries is well nigh thirty thousand. Having some close acquaintance with this last supplement one is greatly impressed by the accuracy with which it is compiled. It used to be said that works such as this were lucky to escape with five per cent of errors, but there is nothing like that percentage here, so the highest meed of praise may be accorded to those who worked at its compilation. The method adopted in this and the later supplements is not primarily to give cross references but the place where the new name is described. Occasionally a synonym is added and, at first sight, this would seem to suggest that it is to be considered as the valid name. That is not so. Let an instance be cited. On p. 14, vol. i., the New Zealand *Acaena Sanguisorbae* Vahl is kept as the valid name (to it *A. decumbens* is referred as a synonym) but *Sanguisorbae* is not the oldest trivial as it only dates from Vahl's Symb. i., 294, 1804. An older one is to be found in *Ancistrum anserinifolium* of Forster's Char. Gen. 4, 1776, therefore a new combination had to be made (*Rep. B.E.C.* 601, 1916) as *Acaena anserinifolia* (Forst.) Dr., in which the original trivial is put under the correct generic name. The compilers shrank, and probably wisely, especially as it would break their new custom, from adding "vice *A. Sanguisorbae*" because they would be taking over the responsibility of the correct identification. In one case at least it seems that the cross reference is not correct. *Habenaria Gymnadenia* Dr. has the cross reference to *Gymnadenia conopsea*, but if we refer to Vol. ii., 1074, we find that *Gymnadenia conopsea* is itself referred to *Habenaria conopsea* Benth., to which the cross reference should be made. One may add that *Habenaria Gymnadenia* was coined by me because *Habenaria conopsea* of Reichb. f. in Bonplandia ii., 10, 1854, takes precedence of the combination *H. conopsea* Benth. which dates from 1880 (*Journ. Linn. Soc.* xviii., 354), as one cannot have two different plants bearing the same name, and since the permanence of the original trivial is not obligatory when it has been seized and attached to a plant in the same genus, as for instance, in the case of *Festuca uniglumis* Sol. The oldest trivial is *membranacea* (Sp. Pl. 1753 under *Stipa*) but in Linnaea in 1863 *Festuca membranacea* was established so that *F. membranacea* Kit. (according to the rule mentioned, with which I disagree) replaces the oldest trivial given by Linnaeus. Had the trivial *conopsea* or rather [*Orchis*] *conopea* L. been conserved then *Habenaria conopea* would be used in the sense meant by Linnaeus. Englerites use *Gymnadenia conopsea* (L.), and as there is no competitor in that genus the earliest trivial can be retained. We are glad to see that many hybrids are now indexed, the word hybrid being put after the name. Probably it is now too late to make a change, but would not the sign × before the name catch the eye quicker and save space? So, too, with regard to sub-species. Should those be indexed and how? It would be a great boon if they were. Would not a minus sign before the name be sufficient to so designate them? We are glad to see that some omissions from the previous volumes have been inserted. Is it too much to hope that some time the proper authors of names should be given which in earlier volumes were attributed to Bentham and Hooker, although they actually never made those combinations. Strictly speaking, one supposes that if they had not previously been made they should stand as ? Jackson, Hooker, or Dyer in Index Kewensis. For a glaring instance see under the genus *Carum*, where in the reduction of *Petroselinum* and *Bunium* the various species of those genera were not individually mentioned in the "Genera Plantarum." Of course, this has nothing to do with the present compilers for whose efforts to obtain such a high standard of perfection one cannot give too high commendation. One may add that the Clarendon Press has kept up its reputation in producing these volumes, and that the price of the first four volumes, bound in two, and the first five supplements is £21 in cloth, or morocco backed, £25 4/-.

Irish Naturalists' Journal, The. Bi-monthly; 6/- subscription to J. Orr, Esq., 17 Garfield Street, Belfast. Editor-in-Chief, J. A. S. Stendall, Esq. Sectional Editors, S. A. Bennett, Esq., Rev. W. R. Megaw, and Prof. James Small, D.Sc. *Scirpus nanus*—as *parvulus*—has a notice with figure by Mr A. W. Stelfox. In its former station on the estuary of the Avoca River at Arklow it has not been seen since 1896 till this year when he found it growing plentifully at Kynoch's Dock. Mr R. A. Phillips and Mr A. W. Stelfox found *Colchicum* near New Ross, Co. Wexford, and with it *Allium oleraceum*, the second locality in Ireland. Here, too, grew *Serratula tinctoria*, var. *integrifolia* Koch. Mr Stelfox (p. 96) notes *Mathiola sinuata* on the coast of Wexford at Kilmichael Point. Mr R. L. Praeger contributes a paper on Irish Plant Geography, pp. 118 and 139, and our member, Mr Colin G. Trapnell, gives an account of the flora of Kincasslagh Head, Co. Donegal (p. 73). The presence of *Solidago cambrica* needs confirmation; it is a much misunderstood plant which is practically limited to Snowdonia.

Jackson, Dr B. Daydon. Visit of Carl Linnaeus to England in 1736. A vivid account is given by Dr Jackson of his journeying to London which he reached at the end of July. His first visit was to Sir Hans Sloane, the President of the Royal Society. Dr Jackson dispels the illusion of Linnaeus going on his knees when he saw a field of gorse on Putney Heath. *Ulex europaeus* is a spring plant and Linnaeus could have seen it only in August or September. But why not *U. nanus*? His visit to England was not fruitless for he carried back a store of plants to embellish the garden of his patron, Cliffort, to whom Linnaeus gave Booerhaave's letter of introduction, which says "Linnaeus, who brings you this letter, is particularly worthy of seeing you and of being seen by you. He who sees you together will look upon a pair of men whose like can hardly be found in the world." He visited Miller at the Chelsea Garden, but the question of nomenclature—then as now—was a ticklish subject and Linneaus's improving on the Tournefortian names did not suit Miller. His well-known visit to Oxford is described and how he conquered the aversion which Dillenius at first felt for the young botanist, who was going to bring confusion into the science, and how reluctant he was to part with him, offering, indeed, to share his stipend if he would stay. He also gave him a copy of the "Hortus Elthamensis," which had cost him so much time and money, and also his third edition of Ray's "Synopsis."

JOHNSON, W. H. COTTON AND ITS PRODUCTION. With an introduction by Sir Wyndham Dunstan and a foreword by Sir W. Himbury. pp. 536, and 26 maps. Macmillan & Co., London, 1926; 30/-. It will be remembered that Dr Goulding's "Cotton and Vegetable Fibres, their Production and Utilisation," was reviewed in our *Report* 75, 1917, and George Bigwood's "Cotton" in the *Report* 586, 1919. Now we have this highly important work, worthy of the great industry it is concerned with, produced in the thorough manner we expect of its author and the publishers. Sir W. Dunstan points out that our own Empire's contribution to the supply of Cotton is less than 10 % of a total of which the United States afford 75 %; of which 60 % is used in manufactures in their own country and that this ratio is increasing although the growth of cotton there is not likely to be much further expanded. Therefore, he thinks, every effort should be made to increase the production of it within our Empire. There is great opportunity in India and the Sudan. Towards stimulating the industry the British Cotton Growing Association has, for nearly a quarter of a century, done much to augment Empire Production. In 1912 the approximate estimate of Cotton grown in new fields in the Empire amounted to 71,490 bales; in 1921 it had increased to 165,200, and in 1924 to 261,900 bales. Large grants were made to East and West Africa and, despite the barren years of the Great War, the increase has grown from 1900 bales in 1903 to 261,900 bales in 1924. The author's experiences of 20 years, not only in Africa but in wide travel, are drawn upon to produce this monumental work. The first chapter is headed Historical. Cotton was known in India in 800 B.C., and Theophrastus (350 B.C.) describes it. The name is derived from the Arabic Kutn, Katan, or Kutun, but it is extraordinary that up to the Eighteenth Century the western world was almost ignorant of its existence. It came into England in 1298 when it was used for lamp-wicks. In 1772 Arkwright and Strutt successfully made goods with cotton warp. Five times more cotton than wool are now used in making clothing. In Britain three million people are entirely dependent on cotton for their means of livelihood, and ten million are affected by it. Its history forms most attractive reading. The second chapter—Botanical— gives a description of the species of *Gossypium*, derived from Gossypion, the name by which Pliny says it was known in the island of Tylos. The various sections of the genus are described. The length of the lint-fibres varies greatly—from a fraction of an inch to over two inches, the West Indian having a long fibre. The diameter, too, differs considerably—from Indian, 000.084 of an inch to the Sea Island, 000.64, one of the finest fibres. Then come exhaustive details of Cotton growing in the various countries of the world. The United States heads the list where, within the Cotton Belt, it is by far the most important crop exceeding that of all the others combined. Then comes India where over 22 million acres are under its cultivation. Egypt has about six million acres, cultivated necessarily under irrigation. Brazil, where it has been grown since 1570, has about one and a half million acres. China is the third largest cotton producing country in the world, 1,862,000 bales being produced in 1924. Russia has its principal cotton areas in Turkestan and Transcaucasia. The British Empire Cotton producing colonies are then treated of at length. Sudan has about 43,000 acres under Cotton and its potentialities are enormous. The minor Cotton growing countries are detailed. Other chapters deal with Cotton Cultivation, Handling and Marketing, and Cotton as viewed from the manufacturers' standpoint, including the extending uses for Cotton It has largely replaced leather for belting and "grips," and portmanteaus are now made of it so as to closely imitate leather. My friend, Mr Fuller Calloway of Georgia, one of the largest cotton manufacturers in the States, showed me hand-bags which had withstood wear and tear in a remarkable manner. In the manufacturing of motor tyres and high explosives large quantities are used: indeed its uses are legion. Suggestions for the Improvement of Cotton, and an account of the Diseases to which it is subject, its Insect Pests, and its Bye-Products are included. The world's production is roughly eleven million tons, which can yield two million tons of oil and eight million tons of food (cotton-cake). It is suggested that 20 per cent. of its meal added to wheat makes a highly nutritious flour. Much of it was so used during the Great War in the United States. What we had to try and assimilate in Britain no tongue can tell. Even now it is not easy to obtain a pure wheat flour. The waste fibres from cotton are not lost. Among other substances which can be made from them is artificial silk. Cotton manufacturers are as ingenious as the Chicago butchers.

Journal of Botany, The, British and Foreign. 1926. Edited by A. B. Rendle, F.R.S. Monthly, 2 -. The new British plants are noticed in our Plant Notes. *Epipactis.* Col. M. J. Godfery (p. 65) discusses the relationships of *Epipactis leptochila*, var. *dunensis*. For various reasons he concludes this should be considered a full species which he calls *Epipactis dunensis* Godfery. *Orchids.* On p. 106, T. A. Sprague discusses the nomenclature of three Orchid genera *Epipactis* or *Helleborine*, *Serapias* and *Goodyera*. He points out that *Serapias* was first used by Linné in 1735 where he cited *Helleborine* as a synonym, and later (1740) he added a second species which was *Serapias lingua*. Hence the first genus, which in Druce's "List" is called *Helleborine* (stated to be a nomen abortivum), must be called *Serapias*. *Serapias lingua* then becomes *Serapiastrum* of Kuntze. *Epipactis* was used by Zinn in 1757 for the combined genera of *Ophrys* and *Serapias*, and is here a nomen abortivum. In 1762 it was used by Boehmer for *Goodyera repens* R.Br., hence *Epipactis* Boehmer should replace *Goodyera* which was not published till 1813. As such changes would be disadvantageous the author proposes conserving *Epipactis* (type-species *E. Helleborine* (L.)), *Goodyera* (type-species *G. repens* R.Br.) and *Serapias* (type-species *S. lingua*).—Abstract by R. W. BUTCHER. British Orobanches. H. W. Pugsley (p. 16) compares the Orobanches as listed in the London Catalogue, 11th edition, with those of Beck's Monograph. He comes to the following conclusions. *Orobanche arenaria* Borkh. is an erroneous record. *O. Ritro*, var. *hypochaeroides* Beck is treated by Beck as a variety of *O. major* L. = *O. elatior* Sutton. *O. rubra* is considered by Beck as a form of *O. alba*. *O. amethystea* of British botanists is not identical with that of Beck's Monograph. The latter has much larger flowers, long subulate calyx-teeth, less glandular corolla, and *Eryngium campestre* is its chief host. The stations are mostly inland. The Isle of Wight plant is considered to be *O. minor*, but no suggestion is made as to the identity of other plants. Some of the more recent records of *O. picridis* on *Crepis virens* may possibly be *O. minor*, which grows on a variety of hosts. —Abstract by R. W. BUTCHER. Dr Church continues, in several contributions, his "Reproductive Mechanism in Land-flora. Some excellent observations (p. 48) are made on British Lemnaceae by J. Gordon Dalgleish. R. Grierson gives a note (p. 61) on *Ledum palustre*. Since the Yorkshire plant proves to be an American species, it will be interesting to hear what the Flanders Moss species may be. Dr A. K. Schindler (p. 145) treats of the Leguminosae-Desmodiinae quoted in Ray's "Historia Plantarum," Vol. iii. Report on the Longevity of the fruit of *Nelumbium*, by Ichiro Ohga (p. 155). In 1850 Robert Brown succeeded in germinating some seeds of *Nelumbium* collected by Sir Hans Sloane 150 years before. 85% retained their germinating powers. Ohga repeated the experiments with seeds which had been attacked by mould but found that they had lost their vitality. Some seed which he obtained from peat-deposits in Japan had 100% vitality. Their exact age has not been ascertained, but probably they are as old as those of sir Hans Sloane. The British Association meeting at Oxford (p. 240). A poem (?) on *Orchis praetermissa* (p. 256). Notes on the British Pansies, by Dr Drabble (p. 263). Index to Bibliographical Notes in the *Journal of Botany* 1893-1924, by J. Ardagh (p. 271). Fourth International Botanical Congress, by Dr Rendle (pp. 296 and 317). Notes on the Genus *Potamogeton* of the "London Catalogue," by A. Bennett (p. 329). A supplement is devoted to John Gossweiler's Plants from Angola and Portuguese Congo, by A. W. Exell and R. D'O. Good. As usual there are some interesting biographies of botanists.

JOURNAL OF ECOLOGY. Edited by A. G. Tansley, M.A., F.R.S. Cambridge University Press; 45/- post free. Includes, among other papers, "Studies on the Ecology of the English Heaths," V. S. Summerhayes and P. H. Williams, p. 203; "Vegetation of the English Chalk, Sussex Downs," A. G. Tansley and R. S. Adamson, p. 10; "A Soil Survey of Hindhead Common," F. M. Haines, p. 33; "Soil-sourness and Soil Acidity," W. H. Pearsall, p. 188; "Salt Marsh Vegetation of Little Island, Co Cork," R. H. M'Crea, p. 317; "Yew Communities of the South Downs," A. S. Watt, p. 282.

KEEBLE, Sir FREDERICK, Professor of Botany in the University of Oxford. LIFE OF PLANTS. pp. viii., 256. The Oxford University Press, 1926; 5/-. Clarendon Science Series. Gen. Editors, Julian Huxley and D. L. Hammick. This charming volume comes to me with pleasure mixed with pain for the year which saw its birth also witnessed the severence of the official connection, as Sherardian Professor, of Sir Frederick Keeble with the Oxford Botanic Garden where it was prepared. One may take this opportunity of acknowledging the unvarying kindness and courtesy that I met with at his hands since his election to that chair. The book has been widely reviewed, and there is an unbroken consensus of opinion regarding the delightfully skilful manner and the great literary style which it evidences. The Introductory is a splendid example of a vivid and terse account of the part which plants play in the world and in exquisitely chosen language the author says—"The sun shone in far-off times on the leaves of prehistoric green plants which grew, it may be by estuarine waters. Of the radiant energy which fell on a leaf, some was absorbed by the green tissues and served for the manufacture of sugars. Much of the sugar was consumed by the plant in the course of its life, but some, undergoing relatively little chemical change, became part of the woody skeleton. Presently the tree died and fell into muddy ooze. Before decay could complete its work of destruction the plant was embalmed and carbon, hydrogen and oxygen, united originally by the sun's energy and the plant's activity, remained united still, though as time went on some of the hydrogen and oxygen was lost, and the plant remains became more and more carbonised. Therein the energy derived from the sun remained dormant until in the furnace of the steam-engine the coal unites with oxygen, reforms water and carbon dioxide, and liberates the long-stored energy: and so in the singing of the escaping steam there is an echo of the incidence of a ray of sunlight on a green leaf ages before the beginning of recorded time." In this graphic manner facts are told which impress the memory and, instead of a dry skeleton of bare detail, a life-like image is presented. The student is led on to consider the Vegetable Kingdom and its members, Fungi and Bacteria, the wheat grain, its composition and its germination, and what the wheat harvests mean. These cover some 400,000 square miles, about three times the area of the British Isles. Much as we decry British agriculture it is gratifying to find that we rival Germany in our standard of cultivation, and are only, and there only in small areas, beaten by Belgium and Holland. As Sir Frederick graphically says, "If man could live by bread alone the world's harvest of 98½ million tons would provide sustenance for well nigh 300,000,000 men." In a charming manner we are taken over the whole range of plant life, and are given a clear account of the Mendelian theory, of phytosynthesis, of carbohydrates, of chromosomes as the material basis of heredity and of hormones, on which the last word has not been said. The illustrations are very helpful in elucidating the various problems dealt with. The price is very small in these days of dear printing, and the little work, written as it is by a man with a facile pen who knows what to say and how to say it in the fewest possible, yet well chosen, words, which has enabled the matter to be compressed into a very small space, should have a wide range of readers who will be grateful for its production.

KEW BULLETIN OF MISCELLANEOUS INFORMATION. Published by H.M. Stationery Office. This increasingly interesting, well produced and very cheap publication contains many papers of taxonomic interest. The first number for 1926 contains an account of the Gamble Herbarium which includes about 50,000 sheets mostly of Indian species. F. J. Chittenden and W. B. Turrill give Taxonomic and Genetical Notes on some species of *Nemophila*—a genus with a basic chromosome number 9. T. A. Sprague discusses "Standard Species," and gives examples. W. B. Turrill, "On the Flora of the Nearer East." H. K. A. Shaw and W. B. Turrill, "Revision of Sibthorp's Plants at Kew." It may be said that these plants were removed by Alexander Prior from the Oxford Collection with or without authority. He may possibly have considered them as duplicates, but the proceeding cannot be defended as they were definitely the possession of Oxford University. Prior was acting as an assistant to Dr Daubeny at the time, and that was doubtless the period when they were removed as he attempted to do something at the collection. T. A. Sprague and M. L. Green, "Alphabetical List of Nomina Rejicienda." While the date for the accepted genus is given, that for the rejected one is not. Sir George Watt on *Gossypium*. Additions to the *Index Kewensis* from K. Koch's *Hortus Dendrologicus*. W. G. Craib, "Contributions to the Flora of Siam." "Exhibit of Historical Pictures of Kew." T. A. Sprague, "An account of Sessé and Moçino's *Plantae Novae Hispaniae* and *Flora Mexicana*." C. E. C. Fischer, "Contributions to the Flora of Burmah." M. L. Green, Crantz *Classis Umbelliferarum Emendata*, 1767. Shows that in *Caucalis nodosa* Crantz has precedence over Scopoli. An Appendix (1/-) gives a List of Seeds of Hardy Herbaceous Plants which ripened at Kew in 1926.

LAING, R. M., and BLACKWELL, E. W. PLANTS OF NEW ZEALAND. Demy 8vo., pp. 475, tt. 175. Ed. 3, revised and rewritten. Whitcombe & Tombs, Auckland, and 9 and 10 St Andrew's Hill, London, E.C.4, 1926; 15/-.

LAWSON, Prof. A. ANSTRUTHER, lectured in January before the Royal Society of Edinburgh on "Endemism and Evolution as observed in the

Australian Flora." Although the flora is large, 70 per cent. of its species and about 30 per cent. of its genera are endemic. The genus *Eucalyptus*, with its 300 species, stands out as the most conspicuous feature, being distributed over the whole continent except the barren deserts. The Leguminosae are second, and the Proteaceae third in numbers. Hybridisation, followed by natural selection, have been the main factor in the evolution of the Australian flora.

Lewis, Francis J., D.Sc., and Dowding, E. S., M.Sc. The Vegetation and Retrogressive Changes of Peat Areas (Muskegs) in Central America. Journ. Ecol. 317, 1926. The area described lies within thirty miles of Edmonton, the altitude being between 2180 and 2500 feet. In an area of 400 square miles there are several hundred lakes varying from Cooking Lake, 9 miles long to small pools 300 feet across. Almost all of them are quite shallow. They are frequently bordered with Carices and Scirpi, backed by zones of Willow or Spruce. The vegetation is described in detail, and there are some pleasing illustrations. Sphagnum, which until recently had dominated the muskegs, is tending to disappear and to be replaced by vegetation indicating drier conditions.

Linnean Society, Proceedings of the. Burlington House, Piccadilly, London. Annual Subscription, £4. November 1925, June 1926. December 1926, pp. 135; 8/-. Meetings. November 19, 1925. Dr H. S. Holden and S. H. Clarke, " On the Seedling Structure of *Tilia europaea*. *Tilia vulgaris* in 1923 seeded well and 70 seedlings were noticed at Nottingham in 1926. December 17. Prof. R. R. Gates gave an extremely interesting lecture, with lantern slides, on "The Vegetation of the Amazon Basin." The area has the largest amount of unexplored country in the world and its drainage area far surpasses that of any other river. January 7, 1926. E. M. Marsden Jones, " The Fertilisation of *Primula vulgaris*, illustrated with lantern slides. The conclusions drawn were that the Primrose is fertilised by diurnal insects and that nocturnal Lepidoptera play no part in it. Prof. F. Wood-Jones gave a brief account of the Fauna and Flora Preserve in Kangaroo Island, South Australia. February 4. Dr C. C. Hurst read a paper on " The Nature and Origin of Species in Rosa." February 18. Prof. F. O. Bower expounded, and illustrated with a series of lantern slides, "A Scheme of Phyletic Grouping of Ferns." H. W. Pugsley, " Further Notes on *Fumaria* and *Rupicapnos* with their Species." March 18. J. L. Sager, " Primula with phyllody of corolla." Specimens were shown from Maidstone and Lympstone, N. Devon, and a caulescent form from Mullion gathered by Walter Barratt. April 15. Prof. Carl Schroeter delivered the Hooker Lecture on " The Swiss National Park." May 6. It was announced that Dr B. Daydon Jackson had been appointed Curator of the Linnean Collections. Dr A. W. Hill read a paper on the Genus *Lilaeopsis*, and Mr R. D'O. Good a paper on the Genus *Empetrum*. May 27. Dr E. J. Allen was awarded the Linnean Gold Medal, and Sir David Prain formally presented the subscribed portrait of Dr B. Daydon

Jackson to the Society. The President's Address was given by Dr A. B. Rendle. It included obituary notices of Professor Bateson, Francis Darwin, Dr Henry Drinkwater, J. C. Gamble, Prof. George Henslow, W. P. Hiern, J. H. Maiden, Jean Massart, Sir Wm. Schlich and G. Schweinfurth. June 10. I. H. Burkill gave a lecture on the Vegetation found by him on lava surfaces of various ages in the crater of Kilauea, Hawaii. T. A. Sprague, "The Taxonomic Position of the Adoxaceae." He places them in Rosales beside *Saxifraga* and nearest *Chrysosplenium*. S. J. Mukerji lectured on the Aquatic and Marsh Vegetation of the Dal Lake, Kashmir.

Lutz, Dr Frank. Nat. Research Council, U.S.A. Dr Lutz has done much statistical work on the colours of flowers in particular regions. Out of some 4000 North American flowers 31% were set down as green, 24% white, 20% yellow, 11% purple, 8% blue, and 6% red. Deducting anemophilous species the percentages remained much the same but green fell from 31% to 8%. To our eyes there are fewer red than of any other colour, but spectroscopically not 8 but 80% of conspicuous flowers are strongly red. Not only blue, but very many, if not most, yellow flowers are as red as red flowers. The reason why they seem white or yellow to us instead of red, is that they reflect other colours which overpower the red. About 50% of conspicuous flowers are strongly blue. From observations on about 100 flowers, Dr Lutz came to the conclusion that most of the yellow, many red and blue flowers are strongly ultra-violet, but that few or no white flowers are so. In all some 30% of conspicuous flowers are strongly ultra-violet. As regards the results of his experiments regarding the visits of insects being induced by colour he thinks the case weighs against the generally accepted theory that the colours of flowers have been developed by natural selection in relation to the visits of insects. Insects, he says, as a class are noted for poor vision, but for a high development of the sense of smell. He is far from asserting that his results are final.

Macself, A. J. Plants from Seed. pp. 239, with 4 coloured, 8 half-tone, and 12 text figures. Thornton, Butterworth, Ltd., London, 1926. This is one of the excellent series of "Home Garden Books" of which Mr Macself, a well-known practical gardener, has already issued seven volumes. In this, the eighth of the series, the author urges the use of seeds wherever possible for the propagation of plants in preference to any other method as seedlings are almost invariably more robust than young plants which are obtained by other means. If this advice be followed a well-stocked garden may be obtained at the least possible outlay, and there is the added charm of being able to watch over the young plant from its earliest appearance. Miss Winifred Walker has done much to add to the attractiveness of the volume by her charming illustrations. The author divides his plants into three groups—Hardy, Half-hardy, and Tender. The second class cover those which cannot withstand the rigours of a British winter, and the third class are un-fitted for outdoor culture. The arrangement is alphabetical, but one wishes that capital letters were not used for the species in all cases. The first sub-group is a list of plants which may be sown in places where they may remain; the second consists of those which may be transplanted. Unfortunately a capital P., A. or B., designating Perennial. Annual, or Biennial, is placed before the specific name, thus—" P. Aconitum Monks Hood," or " P. Actaea "—the latter, of course, being *Actaea spicata*. *B. Scabiosa* is used which is quite misleading. The letters should have been put at the end of the paragraphs. There is, among others, a beautiful photograph of the fruiting head of *Anemone Pulsatilla*. A chapter is devoted to Brief Notes Regarding Special Requirements of a few Hardy Perennials. Tricky Alpines have a helpful chapter and Aquatics are not neglected. Vegetable Seeds and Hybrids have separate chapters full of good practical advice. A calendar, with its monthly sowings, is thoughtfully appended. Even with a plethora of gardening books, there is ample room for this handy volume.

Marlborough, Report of the Natural History Society of. This was founded in 1864. 529 species were recorded for the year 1925. The assistance of our member, Mr C. P. Hurst, is acknowledged. He found *Hieracium Bauhinii* on the railway bridge at Gt. Bedwyn. Miss Todd added twelve Brambles and four Violets to the List. A *Utricularia* and an escape, *Doronicum Pardalianches*, are also included.

Martin, Isa H., M.A., F.L.S. The Field Club Flora of the Lothians by the Botanical Committee of the Edinburgh Natural History Society. Edited by Miss Martin. With Map of the Lothians, Illustrated Glossary, and Ecological Lists. W. Blackwood & Sons, Ltd., pp. 142, 1927; 3/6. In this very compact and excellently printed book a great amount of local knowledge is included. The records are carefully compiled and there is a commendable freedom from misprints. The Ecological Lists will prove very useful. There is a copious and illustrated glossary so that the path of the learner may be smoothed. An asterisk before the name denotes that the plant is not native but more or less well established in the area. One might suggest that a dagger before the name might have been used to mark alien plants instead of " Cas." after the name, as more likely to catch the eye. We note that many of Mr Fraser's aliens recorded in our *Report* are omitted and one would have liked a more up-to-date treatment of the Orchids, as, for example, *Orchis latifolia*, Marshes, &c., Frequent, where eight habitats are given. Some, if not all, of these are *O. praetermissa* or its var. *pulchella*, or *O. purpurella*. Again *O. maculata* L., common, would scarcely apply to *O. Fuchsii*, while four habitats are given for *O. ericetorum* which has two or three older names, and is the *O. maculata* of the *Sp. Pl.* and *Herb. Linn.* There is no allusion to *Dianthus glaucus*, *Lychnis Preslii*, or *Polygonum calcatum* which were first reported from this area, nor for *Thymus Drucei* from North Berwick. *Lonicera Xylosteum* is given as native. Varieties are mostly omitted or sometimes without justification raised to specific rank, *i.e.*, *Senecio discoideus*. *Hieracium murorum* is alone given to cover the *sylvaticum* and *vulgatum* series. *Symphytum patens* Sibth. is only a variety of *S. officinale*, the type not being given, and *Phleum stoloniferum* is by no manner of means a species. Only *Euphrasia officinalis* is listed and one *Thymus*. *Euphorbia Esula* is probably *E. virgata*. Certain erroneous names persist. "*Carex canescens* Auct. non Linn." This dates from the "Species Plantarum" and precedes *C. curta* Good.; *Melica montana* (= *M. nutans*) and *Alnus rotundifolia*, which is *A. Alnus* = *A. glutinosa*. The *Populus nigra* is chiefly, if not wholly, *P. serotina*. We doubt if *Asparagus maritimus* (sens. strict.) occurs in Scotland, **Agropyron repens* (hybrid with *A. junceum*) is my × *A. Hackelii*. It is native. Does no *Nitella* grow in the area? Such are running commentaries and are given in no carping manner. Instead we offer a warm meed of praise to the compilers of this very useful volume which we are sure will have a large sale and do much to stimulate the study of the local flora.

MARRET, L., BEAUVERD, G., and CORREVON, H. Icones florae alpinae plantarum. 3rd Ser., tt. 69. P. Lechevalier, Paris.

MATTHEWS, J. R. Distribution of Certain Members of the British Flora (III.): Irish and Anglo-Irish Plants. Ann. Bot. 773, 1926, with 5 diagrams in text. This is a valuable contribution to the vexed question of plant distribution. He says sixteen species of flowering plants are restricted in the British Isles, as native plants, to Ireland:—*Arabis ciliata* [*A. ciliata*, var. *hibernica*], *Arenaria ciliata* [*A. Brownii* Jord.], *Saxifraga umbrosa*, *S. Geum*, *Inula salicina*, *Arbutus Unedo*, *Erica Mackaii*, *E. mediterranea* [var. *hibernica*], *Daboecia polifolia* [*Boretta cantabrica*], *Euphrasia salisburgensis*, *Pinguicula grandiflora*, *Habenaria intacta*, *Spiranthes Romanzoffiana*, *Sisyrinchium angustifolium*, *Potamogeton Kirkii*, *Glyceria festuciformis* [sic]. Of these nine are Iberian and two of American origin (the *Sparanthes* and the *Sisyrinchium*), but it is doubtful if the latter is native although so completely naturalised, but not more so than *Matricaria suaveolens*. Mr Matthews says:—"While the hibernian species are essentially western, *Glyceria festuciformis* has established itself in N.E. Ireland. Doubts have been expressed regarding its indigenity, but Dr Praeger regards it as native." There is no doubt that the *Glyceria* is native there, but there is grave doubt of its identity with the Adriatic species. Hackel refused it, and I have named it *Glyceria maritima*, var. *hibernica*. It also occurs in Cornwall, Hants and Sussex, and so it should not have been included in the species found in Ireland and not in Britain. There are 68 Anglo-Irish species and the distribution of these is thoughtfully discussed. In the southern half (divisions 1-20) all but 3 of the 68 species are found while 43 occur in the northern half. One might suggest that *Potamogeton varians* is not of much value for comparison since its grade is uncertain and it is highly critical. *Viola stagnina* is also in the Thames drainage. Discussing the question Mr Matthews pictures the British

Flora as the resultant of numerous invasions from the Mainland, coming from different directions. At least five can be distinguished (1) East Anglian, (2) Kentish, (3) Channel, (4) Peninsula, (5) Cornacian. These have shared in the building of our flora over a long period subsequent to the time of maximum glaciation. Personally I have doubted the indigenity of *Simethis* at Bournemouth and have thought its seeds may have come in with the Maritime Pine. In Ireland it appears native. *Diotis* is by no means extinct in Britain. I have seen it from three counties in recent years. In the summary Mr Matthews notes that the range of the rarer species points to a close connection between S.E. Ireland and S.W. England. A prolonged invasion from the south-east became the dominant one and accounts for the preponderance of the Central European element in our flora.

Matthews, J. R. Fife and Kinross Roses, in Trans. Bot. Soc. Edin., vol. 29, 219, 1926. All the main species are recorded except the southern plants, *R. agrestis*, *stylosa* and *tomentella*. *R. arvensis* is recorded as a probable introduction. The distribution appears to be *R. glauca* and *R. coriifolia* dominant in Kinross and at higher altitudes, and *R. canina* and *R. dumetorum* dominant along the south coast of Fife. *R. spinosissima* is chiefly near the seashore and occasionally inland on dry soils. *R. mollis* and *R. tomentosa* are more evenly distributed in the counties. —Abstract by R. W. Butcher. Note on the Flora of Salisbury Crags, *l.c.* 226. With G. Taylor. The Structure and Development of the Stamen in *Erica hirtifolia*, *l.c.* 235.

Meslin, Roger. Bull. Soc. Linn. Normandie. Ser. vii., Edition viii., 14 (1925), 1926. *Bryum neodamense* Itz., &c. This Bryum occurs on the Sands of Barry and at Southport. Mr Meslin found it at Muneville-le-Bingard, Manche. ×*Erica Watsoni*, dans les Landes de Sessay, p. 71.

Naturalist, The. A monthly illustrated Journal, principally for the North of England. Edited by T. Sheppard, M.Sc., and T. W. Woodhead, Ph.D., M.Sc. 1/6 monthly; 15/- yearly, post free. This popular periodical is, as usual, full of interest. Among other papers are:—*Impatiens glandulifera* and other alien plants, G. C. Druce. *Ledum* on Blackstone Edge. The plant recorded in *Journ. Bot.* 178, 1925, as *palustre* proves to be the American *latifolium* and was, of course, planted there. Notes on the Vegetation of Spurn, Yorks. An aberrant specimen of *Cardamine pratensis*, J. M. Brown. *Centaurea* vice *Erythraea*, G. C. Druce. Gives reasons for choosing the former name. Additions to the Flora of Cheshire, N. Woodhead. A valuable list. Remains in the Peat of the Southern Pennines. Mr Flintoff records the occurrence of *Lactuca alpina* in N.E. Yorks. I should much like to see the specimen. Can it not be *macrophylla*? *Centaurium pulchellum* in the Lees estuary on the Yorks Side, T. A. Lofthouse.

National Trust for Places of Historical Interest or Natural Beauty. Annual Report, 1925-6, pp. 103. Subscriptions from 10/-.

The frontispiece is a photograph of Bodiam Castle, recently left to the Trust by the Marquis of Curzon. Additions during the year to properties already acquired include Thurstaston Heath, Irby Hill, Boxhill, Wicken Fen, Colley Hill, Hydons Hill and Westbury College. The new acquisitions are Ashridge, Ivinghoe Beacon, and portions of Ashridge Park and Berkhampstead Common. It is sincerely to be hoped that Ivinghoe Beacon will not suffer the fate of Burnham Beeches. Others acquired are Bodiam and Tattersall Castles; Manor House, Princes Risborough; and Borthwood Copse, Isle of Wight. It may be said that the Ashridge area was obtained by subscriptions amounting to over £45,000 through the generosity of Mr and Mrs Charles Rothschild and her family and at the wish of her late husband. The King's Head Inn, Aylesbury and the Manor House, Princes Risborough, were transferred to the National Trust. A map of England is supplied showing the positions of properties vested in the Trust.

NATURE. Macmillan & Co., St Martin Street, London. Yearly subscription in Britain, £2 12/-.

NATURE RESERVES, SOCIETY FOR THE PROMOTION OF. Handbook 1926. President, the Viscount Ullswater, G.C.B. After a detailed report of the properties under their charge, a Wild Flower Poster was adopted, and a circular letter sent to County Councils throughout Great Britain. The Poster runs as follows:—

WILD FLOWERS.

Save the Flowers by picking sparingly. If picked the flowers last but a little while, and unless a sufficient number of them is left to seed, the flowers will disappear.

The beauty of the countryside would be sadly marred were no flowers to blossom on the banks or in the woods.

Do not UPROOT PLANTS or BREAK TREES or SHRUBS.

Plants and trees as Nature placed them are a delight to the eye; let all who pass by enjoy them.

NORTHAMPTONSHIRE NATURAL HISTORY SOCIETY, JOURNAL OF. The December number contains an account of the Jubilee meeting which was held on October 21, 1926. The President, Earl Spencer, was in the chair at the Dinner and proposed the toast of the Society in an excellent speech which was replied to by Dr G. Claridge Druce, who was one of its founders in 1876. The toast of the President was proposed by the Hon. Sec., Mr H. N. Dixon. Lord Spencer then left, and Dr Druce took the chair. On behalf of the members he presented the Editor of the Journal, Mr Beeby-Thompson, with pieces of plate and a dinner service, and Mr H. N. Dixon with two oil paintings and books in recognition of their many years of work for the Society. A brilliant conversazione followed. In connection with the Jubilee an interesting exhibition in the Museum was also arranged.

NORTH WESTERN NATURALIST, THE. Edited by A. A. Dallman, F.C.S., with H. Britten, G. H. Carpenter, D.Sc., F. H. Green, J. W. Jackson, M.Sc., C. L. Walton, M.Sc., Ph.D., F. E. Weiss, D.Sc., F.R.S., and A. Wilson, F.R.Met.S. as able collaborateurs. T. Buncle & Co., Arbroath. Issued quarterly. Yearly Subscription, 7/6. An excellently printed and neat publication with much readable matter. There are some excellent articles and the Bibliography and notices of current scientific literature are most useful. There is an appreciation of Dr W. E. Hoyle, that born scientific organiser, the late keeper of the National Museum of Wales. The Vegetation of some Welsh Lakes is treated of by N. Woodhead. The altitudes of 29 lakes are given, that of Marchlyn Mawr, 1979 feet, being the highest. We hope that Llyn-yr-Afon, the home of *Potamogeton Griffithii*, may receive attention. It is highly important to know what species of Pondweed grow there. A good account of the Liverpool Botanical Society's excursions is given. In that to Willaston a specimen of *Phleum pratense*, var. *nodosum* L., is recorded with a spike five inches long. May this not be *Phleum intermedium* Jord., which is a larger plant than typical *nodosum*? Much, if not all, of the Scotch Timothy is this plant. We heartily congratulate the editorial staff on producing such an excellent publication. One hopes that additional subscribers may be found so that the heavy expenses may be adequately met.

PAX, F. The Hieracia of Silesia, in Bot. Jahrb. 39, 1924. The genus probably occurred as early as the Tertiary. Hybridity, rather than the mutation theory, is considered the more probable cause of the many variations. Some hybrids have " apparently become species."

PERRIN & BOULGER. BRITISH FLOWERING PLANTS. 4 vols., tt. 300 coloured. Special offer by J. Thornton, 11 Broad Street, Oxford, £5 5/-.

PHILLIPS, REGINALD W. On the Form of Protoplast in Cells of the Genus *Ceramium* and those of *Dasya coccinea*. New Phyt. 277, 1926. A pathetic interest attaches to this, the last paper the Emeritus Professor wrote.

PRESLIA. Report of the Czecho Slovak Botanical Society, 1923-25, Praha. Contains many additions to the Flora of Western Australia, and an attempt to classify Bohemia into natural geographical districts.

RAYNER, J. F., F.R.H.S. A Standard Catalogue of English Names of our Wild Flowers, to which are added the Ferns and their Allies, pp. 56. Simpkin, Marshall, Hamilton, Kent & Co., London: H. M. Gilbert & Son, 24 Above Bar, Southampton, 1926; 1/6. This List is clearly printed and arranged in the ordinary sequence. The English names come first followed by the Latin ones. Many botanists, of whom I am one, see little use in translating, however accurately, the Latin name into its English equivalent and feel it is the wiser course to induce the beginner to learn the Latin name. What advantage can it be to speak of the Yellow-juiced Smooth Long-headed Poppy, a verbage as bad as pre-Linnean names, instead of *Papaver Lecoquii*. Nor can one justify the use of the Fan-leaved Crowfoot, Pink Water Crowfoot, Scotch Scurvy Grass, Long Clustered Bramble or Prickly Bramble (a character not limited to a single species), Stitchwort Marsh Chickweed (which defies the elect), the Hybrid Water Starwort (a plant which may not be of hybrid origin), the Pasture, Bushy, or Narrow-leaved Eyebright, Slender Bladderwort, Scottish Knotweed, Thread-rush, Twig-rush, Long-stalked Pondweed, Saffron Walden Mustard and Braemar Pearlwort. For the Wild-flower Society a list of English names is supplied for which Mr Rayner's may be an improvement, but one wishes that all members of that excellent Society over twelve years of age should be encouraged to face the music, and receive higher marks for using scientific names. One may be met with the tu quoque "You scientific botanists don't always agree upon a name." That is true, but there is no reason to widen the sphere of disagreement by introducing British names which have an even wider range of variation. Even if two people use a different scientific name for the same species, there is little difficulty in finding out what plant is meant. This is a long digression from the review of our valued member's little book which is so well produced. It includes 1619 species names besides many others put in a subordinate grade. The work is singularly free from misprints. *Myosotis sylvatica* and *Lycium chinense* might, in another edition, replace those used, and the names of the Italian botanists are Balbis and Allioni, not Balbi or Allion. The Index is good and the price very cheap.

Rendle, Alfred Barton, D.Sc., F.R.S., P.L.S. The Classification of Flowering Plants. Vol. ii. Dicotyledons. pp. xix., 636, tt. 279. Cambridge University Press, 1926; 30/-. Twenty years have elapsed since the publication of the first volume treating of the Gymnosperms and Monocotyledons, and this, the completion of the Dicotyledons, must be a matter of congratulation to its author who, still adhering to the "Pflanzenfamilien" and "Pflanzenreich," has given the botanical world in a compact form, a work of great importance. The arrangement adopted does not complain to be strictly phylogenetic nor could it be. Too much stress is laid, one thinks, on the importance of such an arrangement. At the present time the botanical student is fully provided by this work of Dr Rendle's, "The Morphological Study of Monocotyledons" by Miss Arber, and the more distinctive work, from a systematic point of view, by Mr Hutchinson. Each of these, to some extent, supplements the other and the trilogy may fairly compare with the German output of the same period. What systematists dread is the continued alteration of sequence which makes the consultation of herbaria so unnecessarily difficult. This work of Dr Rendle's follows, in the main, that of Engler and Prantl. The work bears evidence of great care and is well printed and illustrated. One is pleased to see that the Monochlamydeae are retained, and that Ulmaceae and Urticaceae are kept as distinct families. We notice that Aizoaceae is used instead of Ficoidaceae, which is adopted by Hutchinson. This has alternatives in Tetragoniaceae of Link dating from 1831, and Mesembryanthaceae. The Family names Compositae, Umbelliferae, Labiatae, and Leguminosae, which are in general use, are retained. There is only one other exception to the family name ending in "aceae"—Guttiferae (which is also used by Hutchinson) and for which a name, following the general rule, might have been found or coined. Is it ascertained that *Salix caerulea* is a hybrid of *fragilis* and *alba* as stated on p. 10? The name, *Castanea vulgaris* is antedated by *C. sativa* Miller, but why not face the inevitable and write *Castanea Castanea* (L.) Karst. Does *Quercus Robur* grow in Scotland at an altitude of 1350 feet? Is not *Q. sessiliflora* meant? We are glad to see that the genus, *Pyrus*, includes the *Sorbus* section. *Mespilus* is kept distinct and so are *Ulmaria* and *Filipendula*. *Laburnum vulgare* is antedated by *L. anagyroides*—here again *Laburnum Laburnum* avoids conflicting names. The Red Valerian is still spelt *Centranthus*, the older name being *Kentranthus*. The reader will find an immense amount of interesting matter packed in the pages, and we congratulate Dr Rendle with all his multifarious duties on being able to complete so important a work.

Reychler, Lucien. Concerning the Possibility of Provoking systematically among Plants (a) the Appearance of New Vital Phenomena, (b) Mutation. Results obtained with Cattleyas by Crossing and by Mutation. Goemacre, Rue de la Limite, Bruxelles, 1926. In this somewhat polemic paper the author claims that he is able to fertilise the ovule of an *Impatiens* direct, without the pollen passing through the pistil, and that this artificial impregnation results in an instability being set up which causes many anomalous forms. So, too, with *Clevea* and with *Cattleya*. Ten beautiful figures of the latter are given. He contends that he can provoke mutation by producing and developing the plant individual (in the state of sexual elements or fecundated ovule) in surroundings different from those offered by nature. Burbank, the American plant breeder, wrote to him that—"Mutation and variations are heritable and generally form a starting point for numerous improved varieties, sometimes at once becoming fixed, at other times requiring very much attention for a long time for the raising of numerous seedlings to select from."

Reynolds, Bernard. Whitby Wild Flowers. A Complete Botanic List of the Flowers, Grasses, and Ferns of the Whitby District (including Levisham and Scarborough, and Notes on their History and Habitats. Horne & Son, Whitby, 1925.

Russell, Sir E. J. Plant Nutrition and Crop Production. pp. 115, with illustrations. University of California Press, Berkeley, California, 1926; 12/6. This formed the subject matter of the Hitchcock Lectures for 1924. These were established in 1909 for the purpose of giving the public the benefit of lectures on popular and scientific subjects. In the Foreword Prof. W. W. Campbell says, " The appointment of Sir John Russell was agreed to . . . . because the lecturer embodied in his personality the characteristic type of ability and industry which the agricultural science of this century represents. The distinction of his own contributions to the subject of plants in their relation with soils . . . . assured for his lectures a degree of excellence which would commend them to all persons directly or indirectly interested in that field of work. These lectures have been so well received in California and other states of our country that the University of California feels itself honoured to be the means of making them available to the scientific and popular world. We congratulate ourselves on the opportunity of adding this tribute to the sterling character, ability, and industry of one of England's sons, to the praise he has won so abundantly in his own country and other lands." The work consists of five chapters:—The Study of Plant Nutriment; Positive Science and Exact Demonstration; Decay and the Living Plant; Mors Janua Vitae; The Soil Micro-organisms: can they be controlled and utilised; and The Soil and the Living Plant.

SALISBURY, E. J. The Influence of Earthworms on Soil Reaction and the Stratification of Undisturbed Soils. Journ. Linn. Soc. 417, 1926. Changes in the Hertfordshire Flora. A Consideration of the Influence of Man. Trans. Herts. Nat. Hist. Soc., 1924. A valuable paper, in which the gradual lessening in frequency of our marsh plants is clearly shown to occur. In it it is mentioned that Dillenius introduced *Linaria Cymbalaria* from Italy to our Oxford Botanic Garden. That is not the case. It was in cultivation there as early as 1658 under the name *Cymbalaria italica*. Dr Salisbury mentions that the Box at Gaddesden, Bucks, was planted by the Duke of Bridgwater, and that Kalm noticed it there in his journey to England in 1745. The Effects of Coppicing as illustrated by Woods in Hertfordshire. Trans. Herts. Nat. Hist. Soc., 1924.

SCHANTZ, H. L., and SAMPSON, A. W. FLORA OF UTAH AND NEVADA. Vol. 25. Contributions for the United States National Herbarium. 3700 species of flowering plants and ferns are included with key to the species and larger groups.

SCHINDLER, A. K. Leguminosae-Desmodiinae quoted in Ray's Historia Plantarum, Vol. iii. See Journ. Bot. 148, 1926. Ray added eight new plants to the seventeen species previously described. Of these eight only one was taken up properly by Poiret, and a second was erroneously identified by Linnaeus. The remaining six have been determined by Dr Schindler from the material extant at Oxford and the British Museum Herbarium.

SCOTT, Dr DUKINFIELD. The Botanical Case for Evolution. See Nineteenth Century for February.

Seed Testing. Report of the Fourth International Congress. pp. 227. H.M. Stationery Office, London; 12/6. At the meeting at Cambridge twenty-six countries were represented. Sir Lawrence Weaver, on behalf of the British Government, the Minister of Agriculture and Fisheries and the Council of the Institute, welcomed the delegates. Prof. R. G. Stapledon and Mr A. Eastham were the other English delegates. The Director of the Danish State Seed-Testing Station described the work of the Association from 1921-1924. It was affirmed that *Cuscuta Trifolii* is not found in Scotland. The seed-constituents of Red Clover from various geographical sources are very varied, and to them we doubtless owe the presence in our fields of *Ammi majus* and *Falcaria*. Danish Clover is conspicuous for its quantity of *Trifolium hybridum* and *Rumex Acetosella*. Dutch Red Clover has *Geranium molle* and *pusillum* in enormous quantities. In Roumanian Red Clover *Plantago lanceolata*, *Chenopodium album*, and *Medicago sativa* are preponderant. Swedish Red Clover showed *Phleum pratense* and *Trifolium hybridum* as the common weed-seeds. Extremely interesting details were supplied as to what seeds germinate after passing through the alimentary canal of animals. In Denmark 52% of seeds of *Solanum nigrum* that had passed through a cow germinated, 49% of *Stellaria media*, and 35% of *Polygonum aviculare*. An immense mass of statistics was quoted as to the loss of germinating power owing to age. The results were to me often unexpected. *Lychnis Viscaria*, so often seen in Scandinavia, had a germinating power of 100% directly after harvesting, so, too, had *Geranium pratense* and *Hypericum quadrangulum*, whereas *Phleum pratense* had only 66%. Seeds of *Bromus secalinus* had 100% the first year, but after eight years ceased to grow. *Chenopodium album* had 64% the first year, but did not germinate after four years. *Brassica arvensis*, with its oily seeds, had its greatest percentage in its second year, *i.e.*, 82%, but after 13 years only 13%. *Matricaria inodora*, that prolific seeder, ceased to grow after 12 years. *Carex inflata* only lasted 2 years, and while 47% of its seed germinated in the first year, in the second year it had sunk to 10%. Buried seeds of *Brassica arvensis*, says R. Dorph-Petersen of Denmark, germinated in the first year 77%, in the second year 81%, and in the seventh year had increased to its maximum of 94%, slightly sinking to 87% in the tenth and eleventh year, and to 17% in the eighteenth year. These results substantiate the popular idea as to the persistence of Charlock and to its appearance when a field—even a pasture field—has been brought into cultivation since the rolling seeds blown by the wind in dry weather drop down the cracks in the clayey soil. It may be added that the seed of Charlock stored in very dry places, starting with a germinating percentage of 82 in the first year, 91 in the second, and 89 in the third sank erratically but surely to zero in the fifteenth year. Dr A. von Degen gave an address on the Longevity of Seeds. He quoted an experiment of Giglioli who kept seeds in Oxygen, Nitrogen, Carbon dioxide, &c., for 16 years without their losing the power of germination. I once assisted Dr Romanes in a similar experiment, only dry Chlorine, Alcohol, Chloroform vapour and other gaseous substances were used with Peas, Cereals, &c., which had been carefully sun-dried. Their germination was not affected after two years burial in hermetically sealed bottles, nor was it destroyed by immersion in liquid hydrogen. Degen believes *Nelumbium* to have the greatest longevity. *Cassia bicapsularis* germinated after 87 years. He thinks 150-250 years is the probable maximum of germinating power. The Congress was a great success. The next meeting is to be held in Rome.

SETCHELL, WILLIAM ALBERT. Phytogeographical Notes on Tahiti. pp. 240-324. University of California Publications, 1926. Both the Land and Marine Flora are discussed.

SHELFORD, VICTOR E. NATURALIST'S GUIDE TO THE AMERICAS. Publication Editor, Forrest Shreve; Botany, E. Lucy Braun; Forestry, C. F. Korstan and R. B. Miller. pp. c., 1800, 1926. Baillière, Tindall & Cox; 45/-.

SMALL, Prof. J. In Trans. Bot. Soc. Edin. 230, 1926, he describes a new genus of the Compositae, *Wardaster*, from the marshes of Yunnan-Szechuan. It grew at an altitude of 15,000 feet. The name is in honour of Capt. F. Kingdon Ward, who discovered it. The plant is allied to *Aster*, and it is extremely woolly. Professor W. Wright Smith and Dr Small have also described another new genus, *Parasenecio*, from the same district.

SMITHSONIAN INSTITUTION, of Washington, has in contemplation the preparation of a descriptive Flora of Central America. Recently Dr Paul C. Standley has investigated Costa Rica and has made a collection of nearly 12,000 plants. He is preparing a Flora of that country.

STANFORD, E. G. *Polygonum pensylvanicum* and Related Species. Rhodora 27, 173, 1925. Also the amphibious group, *l.c.* 100-112, 1925. Of *amphibium—natans, terrestre*, and var. *maritimum* are recognised.

STILES, WALTER, Sc.D. PHYTOSYNTHESIS: THE ASSIMILATION OF CARBON BY GREEN PLANTS. pp. vi., 268. Longmans, Green & Co., London, 1925; 16/-. In this book an attempt is made to fill up one of the existing gaps by presenting a comprehensive survey of the subject of Phytosynthesis. It is intended primarily for students reading for University degrees in which Botany is a subject, and for research students, but it is hoped that it will appeal also to the general botanical public as well as to chemists and physiologists. Packed closely in these pages are chapters on The System Involved and on The Assimilatory Pigments. Chlorophyll was named by Pelletier and Caventou in 1811, but it had been extracted from leaves by Grew in 1682, who, at that early date, indicated that there might be more than one coloured substance in the leaf. The Demonstration of Phytosynthesis, its Measurement, the Entrance of Carbon Dioxide into the Assimilatory Organs, the Influence of External and Internal Conditions, its Products, Utilisation of Energy in its

Mechanism, and Relation to other Plant Activities are all treated with great ability and with that caution which marks the scientific mind. The Professor of Botany of the University of Reading has produced a work which will be of real service to the students, while its comprehensive bibliography of 870 references will ensure its finding a place on the shelves of most botanists. Messrs Longmans, Green & Co. have produced this book in a very attractive guise.

SUTTON, MARTIN H. F., in collaboration with D. J. COLUMBUS JONES. Red Clover and the Possibilities of Improved Strains by Breeding. Bulletin n. 14. pp. 32, 1926; 2/6. The authors remind us that in England and Wales the area under Grasses and Clovers reaches the high figure of 17,493,000 acres, so that there is a high incentive to produce such strains as will give a heavier yield. From the details given, it seems that the "Cornish Marl" and "Yellow-seeded" have a higher ratio of true protein than the "Wild Red" which may explain its supposed less nutritive value. Diagrams are given showing the structure of a red clover flower and very excellent details respecting its pollination are supplied. The pollen is said to be very susceptible to moisture so that a wet season is inimical to a large yield.

SUTTON & CO. Plant Breeding and Research in Grasses and Clovers. pp. 32, 1926. This gives the Principles and Methods for the Improvement of Grasses and Clovers. Of the latter one of the most practical results of the plant-breeder's work has been the discovery that the seeds of many clovers produced in this and other countries exhibit a remarkable degree of variation. The English "Red" and Sutton's "Yellow-seeded" have both proved very valuable. Among the late-flowering Red Clovers are "English Single-cut," "Montgomeryshire" and "Cornish Marl." Efforts are being made to separate and isolate the more valuable types of the Wild Red Clover which is the earliest to flower. *T. fragiferum* is proving very valuable not only in England but in New Zealand, especially in wet swamps and tidal regions, also in parts of Australia. The Creeping Fescue (*Festuca arenaria*) is said to be more creeping and denser in habit of growth than several of the other varieties.

SUTTON & SONS. THE CULTURE OF VEGETABLES AND FLOWERS FROM SEEDS AND ROOTS. Seventeenth Edition. pp. 462. Simpkin, Marshall, Hamilton, Kent & Co., London. 1926; 7/6. The contents include chapters on The Culture of Vegetables, A Year's Work in the Vegetable Garden, The Rotation of Crops in the Vegetable Garden, The Chemistry of Garden Crops, Artificial Manures and their Application to Garden Crops, The Culture of Flowers from Seeds, The Culture of Flowering Bulbs, Flowers all the Year Round, The Pests of Garden Plants, and The Fungus Pests of certain Garden Plants and of certain Flowers. The book is written in a wholly optimistic manner on the advances in horticulture during the last half century and few, if any, firms have helped forward this progress more than the celebrated Reading seedsmen. Therefore any suggestions made in this book will, we know, be good since they are the outcome of educated experience. The treatment of the Globe Artichoke, Asparagus, Jerusalem Artichoke, the Broad Bean (said to be one of our most profitable garden crops), the Beet (which is most highly commended), Broccoli and Cabbages of that ilk, Celery, including the Turnip-rooted Celery or Celeriac with its root knob, sometimes five pounds in weight, Chicory, Cucumber, Herbs, Melon, Mushrooms, Onions, Garden Peas, Potatoes, Sea Kale, Spinach, Strawberry, Tomato, Turnip and Vegetable Marrow are among others which are dealt with in a masterly manner. Advice is given on the use of Artificial Manures. A list of plants most fitted to be propagated by seed is included. In fact, there is hardly a garden problem which is not satisfactorily answered in these pages. That it has reached its seventeenth edition is a proof not only of its value but of how much that value is recognised.

THELLUNG, Prof. ALBERT. UMBELLIFERAE. In Illustrierte Flora von Mitteleuropa. Edited by Dr Gustav von Hegi. pp. 926-1537. Band v (2). In this copiously illustrated and well printed Monograph our honorary member has most capably treated of an important Family. We are glad to see that the generic limitations are closely akin to those adopted in our *List* and that they have practically identical species. The generic sequence, too, is fairly approximate. The main differences are that the "nomina conservanda," rather than the oldest names, are used —*Trinia* 1819, not *Apinella* Necker of 1790; *Falcaria* 1800, vice *Prionitis* 1763; *Bifora* 1816, rather than *Anidrum* 1790, and that the following genera have different limitations in Engler and Prantl—authors in the main followed by Dr Thellung from those of Bentham and Hooker, the latter authors combining *Pastinaca* and *Anethum* with *Peucedanum*, *Torilis* with *Caucalis*, and *Orlaya* with *Daucus*, while *Petroselinum*, *Bunium* and *Carum* are retained as distinct genera by Dr Thellung instead of being combined under *Carum*. There is much to be said for either method. Any one who is acquainted with Dr Thellung's meticulous care and intimate knowledge of the plants he treats of would expect that a first-class piece of work would be produced, and one can at once say that the results are eminently satisfactory. There is a wealth of information given about each species. The text figures and the reproduced photographs of plants *in situ* are alike excellent. Take, for instance, that of *Torilis arvensis* (measuring 4 in. × 2¼ in.) where a life-like figure of the plant is given with details of the flower, fruit, and its section. That of *Chaerophyllum aureum* is equally satisfactory. Of *Sanicula* a photographic reproduction (3¼ in. × 2¼ in.) excellently characterises the plant. The geographical distribution is most comprehensive and is often illustrated in a map showing the area of the plant's occurrence. Mr Sprague has pointed out that *Cerefolium* rather than *Chaerofolium* should be used—it precedes *Anthriscus* of Persoon. Fabricius in 1789 also employed it, and it was used in my Berkshire Flora. (Dr

Thellung still holds to his views.) *Oenanthe fluviatilis* is given from West Jutland, Lothringen and Deutsches Oberheingebilt; the forma *terrestris* Glück which was found by Glück at Oxford is also mentioned. Under *Aethusa Cynapium* the vars. *domestica* Wallr. (*hortensis* Boenn.) and *agrestis* Wallr. are described. *Silaum* Mill., 1754, is used in place of *Silaus* Bernh., 1800, and a name, perilously close to a duplicated binomial, is used—*Silaum Silaus* S. & T. One notices that *decurrens* Avé-Lall. of *Angelica sylvestris* is put under the var. *elatior* of Fritch. There are delightfully executed figures of the varieties of leaf form in *Heracleum* but Dr Thellung uses sub-var. *stenophyllum* (Gaud.) to cover var. *angustifolium* Huds., which has a confused synonymy. *Laser trilobum* is used instead of *Siler* for the alien plant at Cherry Hinton, which is now extinct. It had no more right to a place in our flora than the Sequoia. *Siler* Miller, 1754, has *S. montanum* (*Laserpitium montanum*) for its type. There is an excellent Key to the genera occupying 11 pages and a good index. Would that such a comprehensive work on our large English Plant Families were available!

Thellung, A. Die Linnéschen *Daucus*-Arten im Lichte der original-Herbariumplane. Fedde Repert, 305, 1926. Under *D. Carota* L. he has sub-sp. *maximus* (Desf.) Th. (*D. mauritanicus* L. Sp. Pl. 1763 nom. conf.); sub-sp. *Bocconei* (Guss.) Bonnier; sub-sp. *commutatus* (Paul.) Th.; sub-sp. *hispanicus* (Gouan) Th.; sub-sp. *Fontanesii* Th. (*hispidus* Desf. non Mill.) and sub-sp. *gummifer* Th. (*gummifer* Lam) -*maritimus* With. non Lam.

The New Phytologist. Edited by A. G. Tansley, M.A., F.R.S. Vol. xxv.; 25/-.

Thurston, Edgar, and Vigurs, C. C. Note on the Cornish Flora in Journal of the Royal Institute of Cornwall. pp. 99-112, 1926. A useful addition to the Flora of Cornwall. Incidentally one may suggest that *Erysimum orientale* Mill. is used in error for *Conringia* (or *Erysimum*) *orientalis* Dum.; that *Geranium Endressi* Gay is a good West Spanish species and not a form of *striatum*—itself a name antedated by *versicolor* L., and that *Axyris* is the name, not *Oxyria*. The former is a Chenopodiaceous, the latter a Polygonaceous genus. It is very gratifying to find that such excellent attention is paid to the Flora of the Duchy by Mr Thurston and his helpers.

Trelease, William. The American Oaks. Mem. Acad. Sci., Washington. pp. 225, tt. 420, 1924. 51 hybrids are admitted for the U.S.A., and 371 species of which one half are now figured for the first time.

United States Department of Agriculture, Washington. Seeds and Plants imported by the Office of Foreign Plant Introductions. Bureau of Plant Industry. From October 1 to December 31, 1923, 434 species were introduced. The paper is not a mere skeleton of names but has details of a most useful kind. Every page has some fascinating points.

Thirty-seven plants of the genus *Berberis* were introduced for pathological purposes. The root of Master Wort, *Peucedanum Ostruthium*, is said to be used to flavour some of the Swiss Cheese, and *Rumex alpinus* is eaten like spinach—let us hope not by gouty patients. The Farmers' Bulletin, No. 1496, treats of the Inoculation of Legumes and non-Legumes with Nitrogen-fixing and other Bacteria. Figures of the Alfalfa and Soya Bean Nodules, among others, are given. A luminous engraving of a field of Vetch, one half inoculated with bacteria, the other not inoculated shows an extraordinary difference. No. 1468 treats of Muskmelons. In the U.S. 82.000 acres are devoted annually to their growth and the produce is about 32,000 standard freight cars—11,000,000 crates, California and Colorado being the chief sources of supply. A large number of varieties are grown and are well figured. The diseases and insects which attack them are mentioned and remedies suggested. Nos. 1481 and 1482 deal with Roadside Tree-planting in which the best trees for certain localities are suggested and illustrations given. The 85 pages give a mass of most useful information. Would that a similar brochure might be published for Great Britain where our highroads will soon be like the permanent way of a railroad!

VOIGT, ALBAN. Additions to the Flora of Tessin. Viert. Nat. Zurich 71, 1926.

WALES, NATIONAL MUSEUM OF. A Pamphlet issued in 1926 describes some of its contents and its aims and needs. One has nothing but praise for the energy and ability with which this Museum is being planned and propelled. Finely situated and of a novel and pleasing exterior, the interior is being gradually filled with objects of great interest and value. The Department of Botany is a live-wire, and under its able management is becoming of great value. The Herbarium of the late Mr J. A. Wheldon has recently been acquired (10,000 sheets); there are 23,000 packets of Mosses and over 10,000 foreign specimens. The beautiful paintings by Henry Drinkwater include 385 Welsh specimens. We wish every success to this splendid institution and members might assist by sending well-preserved specimens of Welsh plants. The Nineteenth Annual Report for 1925-26, pp. 50, has a good illustration of the stately building. The British Flowering Plants and Ferns now number 38,100, and Mosses, Liverworts, &c., about 45,000. The foreign specimens number about 15,000. The Library has been supplemented by 850 volumes and pamphlets. In twelve months the Museum was visited by nearly 150,000 people. The List of Donations is large and valuable and the illustrations of some of these are very good.

WEBB, J. A., B.A. In the Caithness local paper our member has published a valuable List of Caithness Plants and contrasts the flora with that of Glamorganshire. He says 1600 alien plants have been listed for the Welsh County. We notice that *Fritillaria*, *Colchicum*, *Crocus vernus*, *Hypericum Androsaemum* are included in the Caithness list. Of these one would be glad to have particulars. Mr Manson records *Astragalus alpinus*. If correctly identified this would be a splendid discovery. There are some omissions. Among them are *Euphrasia septentrionalis* recorded and described in *Rep. B.E.C.* 298, 1921. and *Habenaria viridis*, var. *ovata* Dr.

WEIR, JAMES E. A Pathological Survey of the Para Rubber Tree (*Hevea brasiliensis*) in the Amazon Valley. U.S.A. Dept. Agric. Bulletin 1380, pp. 129, 1926. One of those useful treatises for which the Department is celebrated. It is as thorough as it is concise.

WILD FLOWER MAGAZINE. This popular society, of which this is the organ, is conducted with zeal and energy by Mrs Dent of Flass, Maulds Meaburn, Penrith, assisted ably by Lady Davy, Mr N. Sandwith, Miss Mason, Miss Brown, Miss V. Dent, Miss Tucker, Miss Maude Robinson, Miss Hilda Salmon, Miss L. C. Richards, Mrs Imrie, and Mrs Godden. Lord Ullswater contributes a paper on "The Preservation of Wild Flowers" and concludes by saying, "If we can once realise that in cutting off a 'treasure' we are depriving somebody of a pleasure which we have enjoyed we shall think twice and thrice before committing this act of selfishness." Mr C. B. Tahourdin writes in the same strain. The Dean of Gibraltar has an article on "The Flora of Gibraltar," which gives a good account of a delightful bit of botanical country which was so closely studied by Col. A. H. Wolley-Dod. It has several special treasures, to wit *Iberis gibraltarica*, *Saxifraga globulifera*, *Silene gibraltarica*, and *Cerastium gibraltaricum*. 587 species have been noted. There are several confusing misprints. *Elutorum* should be *Elaterium*. Does *Phohine* mean *Phlomis?* The paper will prove useful to one visiting Calpe. Miss G. Bacon, who we are so glad to see in restored health, has two racy articles on Chenopods and Brassicas.

WILD FLOWERS, POPULAR. "The Observer" in July last concluded a Competition among its readers on the most Popular Wild Flowers. The Primrose stood first with 982, then followed the Bluebell 839, Wild Rose 789, Violet 686, Honeysuckle 574, Cowslip 439, Buttercup 355, Daisy 235, Heather 134, Foxglove 137, Gorse 15. Oddly enough the Hawthorn and Anemone only received 39 votes, while the Blackthorn, Mimulus, Crocus and Dandelion had one vote each.

WILSON, ERNEST. The Rhododendrons of Eastern China, the Bonin and Liukiu Islands. Journ. Arnold Arbor. 156-186, 1925. Three new species are included.

WOODWARD, MARCUS. THE NEW BOOK OF TREES. Illustrated with wood engravings by C. Dillon M'Gurk. pp. 309. A. M. Philpot Ltd., 69 Great Russell Street, W.C.1; 12/6 net. The publishers say "This unique tree-book by 'the modern Richard Jefferies' is the most complete yet published. Every chapter begins with a short botanical note, which is followed by the historical and romantic story of the tree, illustrated with references in English literature. Thus it will appeal alike to botanist, country squire, student of folk-lore, and the simple lover of nature.

The striking woodcuts reproduce the essential character of each tree, while the numerous pen-and-ink drawings give the details with admirable fidelity." There is much to be said for this, not altogether unbiassed, encomium. The author in his preface quotes from Oliver Wendell Holmes. "Now, if you expect me to hold forth in a scientific way about my tree-loves—to talk, for instance, of the *Ulmus americana* and describe the ciliated edge of its samara and all that . . . I must refer you to a dull friend who will discourse to you on such matters. What tree lovers want is the meaning, the character, the expression of a tree, as a kind and as an individual." Therefore the botanist, the ordinary taxonomist, must not expect to find great assistance in defining the species described. The oak is said to have two varieties "which Linnaeus recognised above a hundred and fifty years ago." He did not mention them in the "Species Plantarum," but he gives one of them, as an unnamed variety, in the "Flora Suecica" of 1755, and yet omits it from the "Species Plantarum" of 1763, but that is by the way. The author gives the essential differences between the two species, for they surely deserve that grade. He alludes to the "down" on the under side of the leaves of *sessiliflora*, this down really consisting of persistent multiple or bifid hairs, while in *Robur* the leaf undersurface is glabrous. Under the Birch the two species *alba* and *pubescens* are designated as forms. Trees of 70-80 feet often occur, although 50 feet is given as the limit. Under the Elm the Common or Small-leaved Elm, *U. campestris*, is said to be a "native of North America and Siberia, and has been established in Britain since the days of the Roman occupation, but it is by no means certain that it was introduced by the Romans." Is there any evidence that it is a native of North America or Siberia? In the case of *U. montana* the author is more cautious, as he says it is "believed to be a native of Scotland." Does any one doubt its being indigenous in Britain? No reference is made to the Eastern County Elms, nor is there any mention of the commonest Poplar in Britain. But the book is in the main designed for the use of those readers who are not dull botanists, and under each tree is massed much matter of a popular and pleasing kind, which has been well selected. The groups chosen are Woodland Trees—Oak, Beech, Ash, Sweet Chestnut, Birches, and Rowan; Hedgerow Trees—Elms, Poplars, Sycamore, Maple and Hornbeam, and there are 18 species of Small Hedgerow Trees and Shrubs, 12 of Park and Garden Trees, and 18 Coniferae. There are also descriptions of Plane, Tamarisk, Alder, and Willows. The book is well and attractively printed on light unglazed paper and is copiously illustrated. The woodcuts are too modern to appeal to a dull fossil like myself. They do not recall any trees familiar to me, so that it is not familiarity which breeds contempt. Doubtless a younger and better informed generation may delight in them, or in guessing what they represent. That the book will have an extensive sale is quite certain and the general reader will be repaid by the large amount of interesting material which it contains and will be especially grateful for the references to the old village industries connected with timber—such as the Buckinghamshire Beeches.

OBITUARIES.

Bateson, William. Born at Whitby in 1861; died, from heart failure following bronchitis, at Merton, February 8, 1926. He was the son of the Rev. Dr W. H. Bateson, Master of St John's College, Cambridge. Educated at Rugby, he entered his father's college and took the Natural Science Tripos in 1882-3. Stimulated by the genius of Francis Balfour he took up the study of comparative embryology as Balfour student 1887-90, and definitely fixed the position of *Balanoglossus.* He was elected Fellow of that College in 1885. He travelled widely, visiting Siberia and Central Asia, especially to study variations, and on this subject he was led to adopt the idea of discontinuity rather than that of a continuous process. In the brilliant preface to his "Materials for the Study of Variation," he declared that "nature far from jogging along the evolutionary way by imperceptible paces, is of a more joyous habit and is always apt to skip and jump." Here he predicted would be the starting point of the evolution of new species. This brought him into conflict with the more orthodox evolutionists,' and in the discussions he did not always come off second best for he was a vigorous debater and carried the war into the enemy's country with a forceful energy. The results of his studies into what variations did actually occur are to be found in his "Materials for the Study of Variation," published in 1894. The rediscovery in 1900 by De Vries of Mendel's Law, which the Abbé had published in 1866, was eagerly seized upon by Bateson, who became one of the most ardent disciples of Mendelism. In 1902 he published "A Defence of Mendel's Principles of Heredity," in which he countered Professor Wheldon's objections. He was President of Section D. Zoology, at the Cambridge Meeting of the British Association, and gave a vigorous address. In 1906 he was Professor of the International Conference on Genetics, a happy word coined by him, and as a practical outcome of his work a Chair of Biology at Cambridge was founded in 1908, of which he was the first Professor. In 1909, while still holding the chair at Cambridge, he published "Mendel's Principles of Heredity." In 1910, shortly after its publication, he took up his residence at Merton, as Director of the John Innes Horticultural Institution, where he made a name and enriched the subject of his study with many discoveries. For many years he was one of our distinguished members, and I owe much to him for ever readily rendered assistance. In the fateful year 1914 he was President of the British Association Meeting in Australia, and I heard his Presidential Address. It was given in two parts, one at Melbourne and the other at Sydney. For the first time lantern slides were used. Unfortunately, as the room was a large one, the lanternist was at a great distance from the President. Many of the slides were put in in the wrong order, and this so disconcerted Bateson that it made him almost literally tear his hair as he marched up and down the platform, but his address was of marked ability. "Species-mongers," as some derisively call those who have a clearer conception of what a species is than the "lumpers" whose pigeon-hole receptacles, which in many cases represent the Linnean "species," hold most discordant elements as, for instance, the Linnean *Orchis latifolia* or *Serapias longifolia* or the Benthamian *Carex distans* L. The "splitters," the "Hieraciarchs," "Taraxacologists" and "Batalogists" must have been much encouraged when Bateson took up the cudgels in favour of the true breeding forms. He said "Jordan was perfectly right. Those which he distinguished in such multitudes are real entities, though the great systematists, dispensing with such laborious analyses have pooled them into arbitrary Linnean species [scarcely less artificial than his system] for the convenience of collectors, and for the simplification of catalogues. Such pragmatical consideration may mean much in the museum, but with them the student of physiology of vegetation has nothing to do. These 'little species,' finely cut, true-breeding, and innumerable mongrels between them, are what he finds when he examines any so-called variable type. On analysis the semblance of variability disappears, and the illusion is shown to be due to segregation and re-combination of series of factors on pre-determined lines. As soon as the 'little species' are separated out they are found to be fixed." Honours came thickly on Bateson. He was Fellow of the Royal Society, Hon. D.Sc. of Sheffield, Melbourne and Perth, twice vice-president of the Linnean Society, and was chosen President of Section K of the British Association for the Oxford Meeting in 1926. Owing to his lamented death his place was occupied by Professor F. O. Bower, who headed his address with one of Bateson's sentences from the Birkbeck Lecture of 1924—"The Future of Biology lies not in generalisation but in closer and closer analysis." This more chastened attitude is expressed when Bateson says "we must frankly admit that the Mendelian analysis has not given us the origin of species." As Professor Bower so well expressed it, "Bateson's latest public pronouncements may suggest to you what the Section has lost by his death. They show a mind still elastic and perceptive: still both constructive and critical." Botanical Science is the poorer from the death of a notable figure, a real worker, and a strong and vivid personality.

Burbank, Luther. Born at Lancaster, Mass., in 1849; died at Santa Rosa, California, April 11, 1926. His early days were spent on a farm, and in 1875 he established an experimental farm at Santa Rosa. Unfortunately the "energetic press" took him and claimed for him a knowledge of plants outrivalling Solomon, and made him a creator of new products such as no finite person has yet accomplished. The result was that his great services to horticulture were discounted, and such products as his super wheat with its high percentage of glutin, his Wickson Coreless Apple, his Stoneless Plum, and many other wonderful productions are apt to be forgotten or mistrusted.

Cheesman, William Norwood. Born at Winterton, N. Lincs., 1847; died at Selby, November 7, 1925. He was a J.P. for the West Riding of Yorkshire, and a member of the Yorkshire Archaeological

Society. He joined the Linnean Society in 1903 and was President of the Yorkshire Naturalists' Union and of the British Mycological Society. Cheesman was a recognised authority on the Mycetozoa, and wrote on the Mycology of South Africa (Journ. Linn. Soc. 408, 1907) and of the Rocky Mountains (Trans. Brit. Mycol. Soc. 267, 1911). He recently made a gift of £100 to the British Mycological Society. For many years he had been a member of our Society and I saw much of him in Australia on the occasion of the visit of the British Association. On his gatherings there and in New Zealand, see papers by him and Miss Lister in *Journ. Bot.* 203, 1915. He was a prominent Freemason, and wrote some erudite papers on the subject.

Cryer, John. Born at Charlestown, Baildon, Yorks, 1860; died at Bradford, May 7, 1926. He first worked at the Saltaire Mills, and at 13 went to St Paul's Church School where he became a teacher.. He was connected with that profession for upwards of 50 years and did yeoman service in the cause of education. He sat on the Board of the Governors of Salts' Schools, Shipley, from 1891-4, and was chosen as the Teachers' Representative. He was elected to the Bradford School Board in 1894. Three years later he headed the poll with a 5000 majority. He was much interested in school gardens and became an Inspector of Science and Superintendent of Gardening under the Education Authority. For forty years he explored the highways and byways of Yorkshire, and he possessed a real knowledge of its flora. He distinguished himself by discovering a new locality for the milkwort, *Polygala amara* L., var. *alpina* (*P. Amarella*). He specialised in the Hieracia of which he prepared very beautiful herbarium specimens. On this subject he was our acknowledged expert and the Club is under great obligations for his ungrudging help. It was always a pleasure to add his specimens to one's herbarium. I noticed that having once put his specimens into drying sheets he did not often change the paper of which he used a large quantity. He kept them under considerable pressure. I often wondered at the absence of mould. He was very interested in the adventive flora, and about Bradford he is said to have found 500 alien species, several of these being additions to our adventive list. He took me to the best of these areas, and one was deeply gratified to see " these nurslings of another sky " looking so completely at home. Among his additions were *Cucumis myriocarpa*, *Amaranthus Thunbergii*, f. *maculatus*. From 1914 to 1918, Mr Cryer taught Botany at the Technical College. He acted as Editor and Distributor of the Exchange Club in 1912, when the then largest number of plants, 8656, were sent out, of which he sent no fewer than 606 of his own collecting. In the *Report* 719, 1919, he contributed a paper on the Adventive Plants of Bradford, which included many interesting species. In 1924, on his completion of 50 years of educational work, a great tribute was paid him in the local press. Personally, Cryer was a fine type of man, with a pleasant manner and with a broad outlook on men and things. He is a great loss to the Exchange Club—such men as he are difficult to replace. His Herbarium has been acquired by the University of Leeds.

Drinkwater, Dr Harry. Born at Northwich, 1855; died at Wrexham, July 11, 1925. He was educated at Durham and at Edinburgh, of which he became M.D. in 1885, winning a gold medal. Of considerable scientific attainments he received in 1911 the Johann Gregor Mendel Medal at the Fourth International Conference on Genetics at Paris. He was a Fellow of the Royal Society of Edinburgh and President of the Chester Society of Natural Science from 1915-20. See *North West. Nat.* 40, 1926. He received the hon. degree of M.Sc. from the University of Wales in 1924. To this University he presented about 400 paintings of British Plants which are well executed and are faithful representations of the species. Many of them are painted on brown paper and the coloured figures are vivid and life-like. In 1924 he published "Fifty Years of Medical Progress," and had in hand a huge work on Medical Biography.

Duleep, Prince Frederick Singh, M.A., M.V.O., F.S.A. The son of the Maharajah Duleep Singh of Lahore, he was born in London on January 23, 1868. He was educated at Eton and Magdalen College, Cambridge. He served in France from 1917-1919. He was much interested in archaeology, gardening, music and history. He had made a considerable collection of historic paintings which he has left to Norfolk. Having made His Highness's acquaintance at Blenheim, one found he was much interested in trees and shrubs. Last year he entertained some of us on one of our meetings at his old-world mansion at Blo Norton, when his own fen-land was explored and the rare *Liparis* seen in flower, Unfortunately he had a cerebral seizure the previous year and with that shadow hanging over him he had to relinquish many of his interests. The end came all too soon. He was of a thoroughly kind disposition and had gained the respect and affection of a large circle of friends.

Fawcett, William. Born at Arklow, Co. Wicklow, Ireland, February 13, 1851; died suddenly at Blackheath, August 14, 1926. See *Journ. Bot.* 310, with list of his publications. Educated at Dulwich College he became for a time a member of the scholastic profession by teaching in a private school in Kent, but he decided to take up botany and studied at King's College, where he obtained his B.Sc. in 1879. He then entered the Department of Botany at the British Museum and remained there until 1886 when he was chosen to succeed Daniel Morris as Director of Botanic Gardens and Plantations in Jamaica. There he did excellent work, and in 1893 published "A Provisional List of the Indigenous and Naturalised Flowering Plants of Jamaica," founded on Grisebach's "Flora of the British West Indies." He retired in 1908, and again became connected with the Herbarium at the British Museum. There, in conjunction with Dr Rendle, "The Flora of Jamaica" was prepared, of which five volumes have been published, the last volume being issued shortly before his death. It completed the free-petalled Dicotyledons. Volume 2 has not yet been published. Any visitor to the British Museum Herbarium must recall his quiet assiduity. He did much to encourage the economic side of Botany in Jamaica and wrote a useful book in 1914 on "The Banana: its Cultivation, Distribution, and Commercial Uses."

Fox, Prebendary Henry Elliott. Born at Masulipatam, S. India, October 21, 1841; died at The Croft, Lytton Grove, ~~Surrey~~, 1926. He was educated at Harrow (Mr Vaughan's House) and Trinity College, Cambridge, taking in 1864 a third-class in Classical Tripos. He entered Lincoln's Inn in 1864, but he had been interested in Church work, especially foreign missions, so he joined the Church, being ordained by Samuel Wilberforce. He became curate at S. Ebbe's, Oxford, in 1869; vicar of Christ Church, Westminster, in 1873, and then of St Nicholas, Durham, in 1882. From there he joined the Church Army and did excellent work in Madras along with eight others. He was Honorary Secretary of the Church Missionary Society from 1895 to 1910, and was the author of several religious works. When at Oxford he made the acquaintance of Prof. Lawson. Being much interested in British Botany he accompanied Prof. Lawson and Prof. D. Oliver to Skye in 1868, and a list of their discoveries was published in *Journ. Bot.* 108, 1869. The list numbers 389 species, of which 51 were said to be additions to the flora of the Inner Hebrides. One may say that the *Cerastium alpinum* of the list was *C. nigrescens* (but the true *alpinum* has since been found there) and the *Orchis latifolia* was *O. praetermissa*, var. *pulchella*. In 1890 Mr Fox went to Palestine where he held special services for the congregations in Jerusalem. He collected plants there with assiduity and a warm testimony to his help is accorded by Post in his "Flora of Palestine." Many of his plants are preserved at South Kensington. In 1901, the Bishop of London appointed him to the prebend of Holborn, in St Paul's Cathedral. He lived at The Croft, Lytton Grove, a large house once occupied by an eminent judge. There he had a spacious garden and a considerable and well-arranged Herbarium. This before his death he was good enough to give me. It has many plants from Cornwall, Surrey and especially from Durham and Scotland, but it is unexpectedly weak in critical species. He was one of our oldest members, having joined in 1867. In that year he sent to the Club *Cuscuta hassiaca*, which he and Lawson had found at the Cambridge Railway Station, and in 1868 he sent *Epilobium anagallidifolium* from Skye. In 1885 he accompanied Hanbury to Caithness and Sutherland and the results of their visit are given in *Journ. Bot.* 333, 1885. He also collected many plants on the Continent, but his Japanese collection, which he had given to a local museum, was, I am told, destroyed owing to bad storage. His European collection is also in my possession, and he was kind enough to give me his copy of the first edition of Sowerby's "English Botany" and many local floras. He was a man of fine presence, an earnest preacher, and of a kindly disposition. He was thrice married, and leaves a widow, son, and five daughters. One of his sons died as a missionary at Kano, West Africa. As one has said, his herbarium was a large one and contained many rare species. As our pages show, it contained a sheet of four specimens of

Botrychium from Kincardine, collected by T. Sim in 1876, and labelled *Lunaria*. Three were *Lunaria*, but one is *matricariifolium* (=*rutaceum*) At present only a portion of the collection has been critically examined. His death leaves a sad blank in our membership: to myself it is a great personal sorrow.

GAINSBOROUGH, CHARLES WILLIAM FRANCIS NOEL, THE THIRD EARL OF. Born October 20, 1850; died 1926. He was educated at Oscott and served in the 10th Hussars, succeeding to the Earldom in 1884. He became Lord Lieutenant of Rutland. He was twice married, first to Augusta Berkeley of Spetchley, a connection of the Rev. M. J. Berkeley, who probably gave him a taste for botany. His second wife, Miss Dease of Westmeath, by whom he had five children, survives him. For some years he was a member of our Society and was keen on seeing British plants in flower from year to year. I had the pleasure of showing him *Gagea*, *Aristolochia* and some of our Oxford rarities, and in return he showed me *Linum perenne* at Great Chesterton near Stamford. Although a visit to Exton Park was proposed, I could never find time to avail myself of it. He was greatly interested in our *Reports*, and gave me the first record of *Montia* for Rutland. For some time he had been a great invalid.

GUPPY, HENRY BROUGHAM, F.R.S. Born at Falmouth, 1854; died at Martinique, April 23, 1926. The son of T. S. Guppy, M.D., he was educated at King's College, Sherborne; Queen's College, Birmingham, and Edinburgh University. He served in the Medical Service of the Royal Navy from 1876-1885, being Surgeon on H.M.S. "Hornet" on the China and Japan Station from 1877-80, and on H.M.S. "Lark," which was commissioned for survey work in the Western Pacific from 1881 to 1884. He made a close investigation of the coral-reefs on the Keeling-Cocos Islands and Western Java. Upwards of twenty islands and islets were examined by him. (See *Nature* 39, 286, 1889.) He concluded that the small atolls and horse-shoe islands only assumed their form after their emergence, thus challenging, and not unsuccessfully, Darwin's suggested theory of submergence. He contributed a paper on plant dispersal as shown by these islands to the Journ. Vict. Inst. in 1890. In 1903 in a physical and geological monograph on Vanua Levu, one of the Fiji group, he describes the building up on a submarine basaltic plateau of the reef-formation of that island. He published two volumes on the Solomon Islands and two on the Fijis and Hawaiis. In 1892 he read a paper on "The River Thames as an Agent in Plant Dispersal" before the Linnean Society, and two years later one on "The Habits of the three species of *Lemna*." This led to our acquaintance. But it was in Plant Dispersal that he had the greatest interest, and it was in this subject that he gained his brighest honours. For this his wide and thorough investigations in the Pacific gave him a full equipment of facts, and this is evidenced by his work on "Plant Dispersal" issued in 1906. *Inter alia*, the great Pacific land-area, which had been suggested, receives no support from him. In 1917 he published the results of his investigations in "Plants, Seeds and Currents in the West Indies and Azores," which is a valuable addition to our knowledge of the floras of these islands, especially of the island of Pico, of which he made a detailed flora. He was elected to the Royal Society in 1918, and was also a recipient of the Linnean medal. Mr Guppy's work was of a high order, marked with most patient industry in accumulating facts. Even if he had done no more his life would have been amply justified, but he had the higher gift of being able to gather from his well arrayed mass of facts visions of arrangements in what might have been meaningless occurrences, so as to predict, with great probabilities, the results of Plant dispersal which have so influenced the floras of the world. His death leaves our Society immeasurably poorer from the absence of such an original and acute a mind.

Hackel, Eduard. Born at Haida, German Bohemia, March 18, 1850; died at his home at Attersee, February 17, 1926. After preparing at the Realschule, 1859-65, he went to The Polytechnic High School at Vienna, where he obtained his diploma, and then to St Polten, where he taught in the Realschule till 1900, when he retired and took up his residence at the beautiful Attersee. He elaborated the Gramineae for Engler and Prantl's "Die Naturliche Pflanzenfamilien," an extraordinarily clever piece of work, which he finished in 1889. The English translation appeared in 1896 as "The True Grasses." Prior to this, in 1882, he published the "Monographia Festucarum Europaearum," an extremely able and critical work. In 1891 he brought out his "Monograph of the Andropogoneae," which Dr Stapf calls a masterpiece of descriptive botanical literature. His last work was a continuation of "Gramineae Novae" in Fedde's "Repertorium" of 1893. For many years I was in frequent correspondence with Professor Hackel who, with unrivalled patience, determined the grasses for our Club, of which he was an Honorary Member. The grass which I sent him as *Bromus mollis*, nov. var. *aggregatus*, he was much delighted with, and I asked him to name and describe it, which he did as var. *interruptus*. In after time, when its split pales proved to be a constant character, he fully agreed to my naming it as a species. He also named var. *scotica* and var. *laevis*, two varieties of *Agrostis canina*, one from Ben Eay, the other from the summit of Brandon Mountain in Kerry. The former at first led me to think I had got *A. rubra*. Indeed, writing from St Polten in 1889, Hackel said:—"Your Agrostis is in some degree intermediate between *A. canina* and *A. rubra*. Such intermediates have been mentioned by Berlin (Ofhers Stockh. For. 76, 1887), but he gave no name to any of them. I should like to name your Agrostis *A. canina*, var. *scotica*. Like true *canina* it offers two sub-varieties, *aristata* and *mutica*." He says true *rubra* differs from it in its flat radical leaves, strongly tufted growth without runners. Later I sent a large set of *Bromus racemosus* and *commutatus* expressing a belief that they were not specifically distinct. He replied, "I have studied these . . . . and also confess that I have altered my opinion on the value of the two species. I am now inclined to see in them only varieties of one species which should bear the older name, *B. racemosus* L. The intermediates between the two plants are too numerous, the differences too weak, to be equal to those between good species," and he goes on to give a diagnosis of them as varieties. He and his wife had a wide range of tastes and were fond of travel. In February 1910, he went with his wife to Italy because "The winter in our country is tedious, chiefly on account of its long duration. At this moment we have a continuous cover of 30 cm. depth of snow, and the weather is predominantly dim and cloudy. In January we had only six sunny days, in February three till now out of twelve, no wonder that we long for more sunny countries. I am very grateful to you for your kind wishes, for the separate copies, and your portrait." Their visit to Nice was cut short because (Attersee, March 3, 1912), "In my absence thieves broke into my villa, plundering it and causing heavy damages to the furniture. . . . As yet they have been undetected." On the 10th March 1912 he says the damage caused by thieves amounted to 1500 or 1600 crowns. I felt this was a fitting time to show our sympathy, and, therefore, sent out a circular to our members, which resulted in a handsome sum being subscribed. I informed him of this, and asked him which would be most pleasing to him—any special books or plate or a cheque which, perhaps, he might like to use in replacing some of the articles stolen, or in repairing the damage done. Professor Hackel replied, "I enjoy very much the expression of sympathy on the part of the members, which I fully estimate. But I must beg your pardon for not accepting the gift which you propose, because it has been connected with the sad event that troubled me and my wife last winter, and it would become a memento, not only of the amicable minds of the contributors, but also of the adversity we endured, the memory of which we use all efforts to erase from our minds." In case, he says, it is difficult to return it to the subscribers, he would suggest that it might be given to some student with slender means. "Such an appliance of it would give me more satisfaction than any object of art or the like could afford. I beseech you to transmit to the members my best thanks for their amicable design, and to assure them that I shall always put to their disposal my knowledge of grasses." He (31/10/1912) cordially approved of the method we adopted in carrying out his suggestion for disposal of this money. It may be remembered he took a great interest in the Galashiels Aliens. They included two species of *Nassella*, a genus of which no alien species had hitherto been found. "The fact of mountain species of the Andes reappearing as aliens in Scotland is beyond doubt." The Chilian *Stipa* had been found only once by Poeppig.

The correspondence of Hackel teems with interesting details. A few of these have been printed in our Reports, but it may be well to call attention again to some of them.

POA LAXA and STRICTA Syme. He writes (20/10/1896)—"I believe with you that all records of [true] *Poa laxa* and *stricta* Lindeb. in

Scotland are erroneous." *P. laxa* of Lochnagar differs from type *laxa*, and I therefore named it var. *scotica* (*Journ. Linn. Soc.* xxxv., 427). He believed *Poa Chaixii* to be native in Britain.

Deyeuxia strigosa. Writing from Attersee (1/1/1908), on Caithness specimens, which agreed with Bennett's *strigosa*, he says:— "This specimen approaches really somewhat *C. strigosa*, but does not agree with it in the length of the callus-hairs, which are of the length of the floret in *strigosa*. Also the panicle is much broaded and laxer in *strigosa*. I agree with Almquist (*Neum. Sver. Fl.* 1901), who declares *C. strigosa* to be a hybrid of *C. Epigeios* and *neglecta*. Should it not be possible that it [the plant from Caithness] be a hybrid? It has really some of the characters of *Epigeios*, in the form of the outer glumes, but it is much nearer *C. neglecta* than *C. Epigeios*, while *strigosa* is almost intermediate." Other forms from Loch Watton and Scarmclett he said were [137] typical *neglecta*, [35] *neglecta*, with somewhat longer and more acute glumes. Subsequently (21/12/1902), he referred the Caithness "*strigosa*" certainly to a var. of *neglecta*, which I named var. *scotica*, and more recently raised to a species or sub-species. Hackel, it seems, was doubtful if *C. strigosa* grew in Scotland.

Koeleria vallesiaca. (St Polten. 9/10/1907). "Especially interesting is the *Koeleria* from Brent Downs, though the specimen is very scanty. I do not hesitate to recognise that it belongs to *K. vallesiaca* Gaud. (*K. vallesiana* A. & G. Synopsis ii., 354). The swollen base of culms and innovations, consisting of a mass of old sheaths from which the fibres (vascular bundles) wither out, becoming free and reticulated, is very characteristic of *K. vallesiaca*. This species has never been recorded from Great Britain, and it would first be necessary to find out whether the plant has survived in its station from the time of Dillenius to ours. The existence of *K. vallesiaca* in Western England would be very interesting, but not very surprising, that species existing also in Western France, chiefly in the "Landes," and northward up to the Loire river. In the interior of France it is yet more common.

The perennial form of *Poa annua* from Thurso is also interesting, and I hope you will fix your attention in the coming season to similar forms, and if possible gather some of them for me."

Festuca dumetorum L. (12/8/1910). "In my view this is a subspecies of *F. rubra*."

Agropyron acutum DC. (14/12/1907). Hackel says he does not believe the true *Triticum acutum* DC. occurs in Britain. "The plant, of which I have splendid specimens ex loco classico, by Duval Jouve, seems to be a hybrid of *T. junceum* with *T. litorale* Host, a view which Duval Jouve first uttered (*Bull. Soc. Bot. Fr.* 1878). The *T. acutum* of British and North German authors is *T. junceum* x *repens*. Of this I have seen specimens from Arran and "Shore at Hamble, S. Hants." In our *Report* 578, 1897, he thought it might be *T. laxum* Fr. See also *Rep. B.E.C.* 33, 1903. I named this hybrid *Agropyron Hackelii* in *Report* 252, 1906. "*A. pinguis* (1/11/1904), can be distinguished from this hybrid by the tight spikes, elongated and somewhat mucronate, and by the fertile glumes, etc. It also has an awned form."

GLYCERIA FESTUCIFORMIS. On November 11, 1909, he writes "The *Glyceria festuciformis* from Strangford Lough is a very critical form, by no means identical with the type of our Istrian salt-marshes, but approaching the plant I named *(in lit.) Atropis Foucaudii*, which has since been published in Husnot's 'Gramineae.' But it differs from the French plant in its somewhat convolute leaves, smaller and more contracted panicle and fewer spikelets. It seems to be a distinct local form which ought to receive a name as a variety or sub-species. The whole group of *A. distans*, in the wider sense to which also *A. festuciformis* belongs as a sub-species, is so very difficult to bring into a system that it requires the work of a monographer who will have to study it at least for a year or more. We must look to the future for such work. Your No. 2 is the same, but with more open panicle, and somewhat smaller spikelets, making an approach to *A. distans*." On October 10, 1909, he says he is not able to describe the Strangford Lough plant, as he is not at all clear about its difference from the neighbouring forms. It requires more study, not only of that, but of all the kindred forms. It will be observed that he speaks of the Irish plants as belonging to *A. distans*, but a closer examination led me to believe it belonged to *Glyceria maritima*, as a well-marked variety which I named var. *hibernica*. I subsequently found it in great plenty on the Sussex coast, and also in Hampshire. "*Atropis Foucaudii*," he says (30/12/1908), "is in its typical form of southern France well distinguished from *festuciformis*, but all those species *(festuciformis* itself, *convoluta*, *pseudo-distans)*, are very critical, and their distinctions from *distans* are often uncertain." [In this letter he gives a diagnosis of the sub-var. *pruinosa* of *Festuca rubra*]. As regards the *festuciformis*, on October 30, 1916, Dr Stapf, writing from Kew, says, "In my opinion there is no *Atropis festuciformis* in the British Isles. Your specimens from South of England [W. Sussex], and the one from Ireland [Strangford]) are *A. maritima* or *Foucaudii*, at any rate they are indistinguishable from an Irish specimen named by Hackel as *Foucaudii*. . . . . . I would, therefore, suggest to treat them at present (and also the *festuciformis* from Co. Down), as *A. maritima*."

AGROSTIS PUMILA L. (Attersee, 26/11/1908). "You wish to have my opinion of *Agrostis pumila*. This is a matter which vexed me often, and I must confess that I did not come to a satisfactory result about this question. I think that only field-observation and carefully directed cultures can settle it. As *A. pumila* does not grow in my neighbourhood, I am not able to make such investigations, but I should be very happy to hear that you would undertake that work. In herbaria I see *A. pumila* always with ovaries affected by *Tilletia*, but in literature I find some statements pointing out that we have to distinguish between the *pumila* state caused by *Tilletia* and another *pumila* free from it. Boreau declares *(Mém. Soc. Maine et Loire*, 1862), that he observed *A. pumila* L. near Angers without the fungus on the ovaries. A. & G. *(Synopsis* ii.

181), have a variety *humilis* of *A. vulgaris*, of which they say that it is very characteristic and grows in great quantity on the shores of lakes, wet sands, in heaths, etc." Hackel considered the form with the ovaries infested by *Tilletia decipiens* to be very similar to var. *humilis*. He distinguishes, therefore, between *pumila*, the diseased form of *vulgaris*, and var. *humilis* without the fungus. Of *A. alba* he enumerates *A. alba E. pumila* Kunth, a form caused by *Tilletia decipiens*, and of *A. canina* L., he says there is a form with strange-looking spikelets caused by *Tilletia*.

One of the last letters from him I received is dated February 4, 1913. " You will, perhaps, observe that I am not now, as I was in former years, much inclined to distinguish and name " micromorphs." There is no doubt that I could add a dozen or more forms of *Festuca rubra* to those distinguished in my Monograph of Festucas, but I am doubtful about the use of it for science. I am also of opinion that without field observations, the dignity of such inferior forms cannot be rightly evaluated. And so I let them be unnamed. I wish you good health, much pleasure and success in your voyage to the West Indies. I should be happy to accompany you there, but for a severe attack of rheumatism, which I owe no doubt to the eternal moist weather of the last autumn. I hope to expel it by a cure which I shall undergo at Meran. We shall add some weeks' sojourn on the Riviera. I long to see like you the tropical vegetation, and to study its biological conditions. I hope to be able to make a voyage with my wife to Java and Ceylon for that purpose. We intend to sell our villa and to settle in a milder climate, perhaps at Meran, but it will take some time to find a buyer for it, my great herbarium and library being an obstacle for changing domicile so freely as we wish to do. I have already thought of selling them, too. This would put an end to my systematical study of grasses, of which I am already tired, and would lead me wholly to the way of ecological studies and field-observations on botanical voyages. I have seen so little of forms of vegetation other than ours. For my wife also, who suffers sometimes from depressions of mind, it would be a blessing to enjoy a less monotonous life than we have led these last years. But all these are projects which need to be well considered! I shall follow you in my mind to the brilliant vegetation of Jamaica and other British West Indian Islands." Then came the Great War and the cessation of our correspondence. That war and its results practically ruined him, and although he remained at his old home, it was with shattered health and means of the straitest. He was a real student, a lover of nature, and a ready helper to those who stood in need. Some of our poorer members have to thank Eduard Hackel for so generously handing over the testimonial for their use, and the Society has lost one of its most helpful critics and a kindly friend.

HOLFORD, COLONEL SIR GEORGE LINDSAY, K.C.V.O. Born June 2, 1860, the son of Robert Stayner Holford and of Mary Ann, daughter of General James Lindsay of Balcarres, Fife; died at Westonbirt.

Gloucester, September 11, 1926. His father, known as Squire Holford, was M.P. for the Eastern Division of Gloucestershire from 1845 to 1872. His three daughters married the late Earl of Morley, the late Earl Grey, and Mr Robert Henry Benson of Buckhurst, the eminent banker, and a great art collector. The Holford family were established in Cheshire in the seventh century, and it was by marriage to an heiress of the Crewe family that Westonbirt came into the possession of Sir Robert Holford, Master in Chancery. Both his son and grandson held the same office. About the middle of the nineteenth century, another property in the county came into possession of the Squire, inherited from an uncle. He was a great and judicious collector, not only of pictures, but of illuminated MSS. and Shakespearian Folios. He possessed the first edition of Bunyan's "Pilgrim's Progress" of 1678, and a remarkable collection of prints and drawings. The latter was a testimony to his judgment for though they had cost £7000 they realised over £28,000 when sold in 1893. Gloucestershire has at Hynam another house with rare Italian paintings and an arboretum which is about the same date as that at Westonbirt. The owners of the two estates had a wholesome rivalry. Mr Holford determined on rebuilding Westonbirt and entrusted it to the architect, Vulliamy, in 1863, who raised an ornate and stately structure inspired, as was Mentmore, by Wollaton Hall near Nottingham, which was built by John of Padua, but it is by no means a slavish copy. It was set in grounds of great beauty, in the preparation of which a village had to be removed. The Squire filled this magnificent mansion with treasures, rich and rare—splendid pictures which included five Rembrandts, four Van Dycks, including the "Abbé Scaglia," Mabuse's "David of Burgundy," several Sustermans and Rubens. Nine of those were shown at the Flemish and Belgian Art Exhibition this year. Of the pictures Mr R. H. Benson has prepared a delightful and scholarly catalogue. The Holford Hobbema was sold some years ago, as was the Velasquez portrait of the Duke of Olivares, which is said to have fetched £70,000. But it was not only the pictures that make Westonbirt so rich. The great salon was panelled with walnut wood obtained from the estate, and had at its end a Papal Throne of the Medici, magnificent Italian Coffers, Venetian Glass, bronzes, and all the accessories of a palace. The outside was worthy of the mansion for the gardens were large, well laid out in stately style (in this Gilpin had a hand), with artificial water which did not assert its artificiality, with an arboretum replete with treasures and with ranges of houses and gardens showing herbaceous borders of glowing grandeur. But it was not only in Gloucestershire that the Squire had a home. He built Dorchester House in Park Lane with Vulliamy as the architect, and it is in the front rank of the great houses of the Metropolis. Its rare marbles, its magnificent staircase and ballroom, and its contents were in no whit inferior to Westonbirt. It was to these two mansions and a large estate of over 16,000 acres that our member succeeded in 1892. He went to Mr Evans' house at Eton in 1873. In 1880 he joined the first Life Guards from which he retired in 1908 as brevet Lieutenant-Colonel.

During the war he commanded the Reserve Regiment of the First Life Guards. From 1885 he was Equerry to the late Duke of Clarence by whom he was held in the highest esteem, and from 1892 to 1910 was Equerry-in-Waiting to King Edward. On King Edward's death he held the same office to Queen Alexandra, and was appointed Extra Equerry to King George. He was made K.C.V.O. in 1910 and C.B.E. in 1919. He married one of the sweetest of women, Susannah West, daughter of the late Mr Arthur Wilson of Tranby Croft and the widow of Mr J. Graham Menzies. A happier union could not be conceived, and their mutual taste was gardening in its highest stage of development. Nothing but loving care and infinite trouble could have made Silk Wood and the surroundings so supremely lovely. Sir George's own speciality was hybridising Orchids and Clivas. When I was last there, in answer to my question about the Cymbidiums, I was told there were over 10,000 seedlings in pots coming on. The blaze of colour radiated by 800 pots of Amaryllis in flower as shown by the rays of the descending sun was a spectacle never to be forgotten. To do all this there was an army of nearly a hundred employees. His hospitality was proverbial, and how many minds will be saddened when they realise that those "colour weekends" are now things of the past, for it was his delight to have appreciative friends round him to share the beauties of vernal and autumnal tints. How he loved his garden is shown by an extract from a letter (October 21, 1923), "The autumnal tints have gone on intensifying ever since you left. Many have gone over, but on the whole I think the last two days have been the climax, and the place is looking lovely. No, we have decided not to eat the Chanterells, which grew mostly under yews. As you say 'the game is not worth the Chanterell'." Sir George was an extremely handsome man, and there is a pastel portrait of him at Westonbirt which nearly does him justice. When relieved from Court duties he devoted himself to his trees, gardens and greenhouses at Westonbirt, and with the assistance of such a head gardener as Chapman and his successor he swept the boards at the Horticultural Society with his Orchids and Hippeastrums. Gold medals he had galore, but about three or four years ago Westonbirt was burglared and these were all stolen and melted down. The thieves actually entered Lady Holford's bedroom and walked off with (fortunately a replica) of a famous pearl necklace. But it was not the loss of the medals that worried the owner. His sweet disposition overcame that. He had a joy in the contest for a prize rather than for the prize itself, and I think the disarrangement of his papers in the rogues' search for plunder was almost as great an annoyance. He was a Vice-President of the Horticultural Society and a supporter of many of its ramifications and of horticultural exploration. His own magnificent assortment of Rhododendrons at Westonbirt was not to be made by money only. My own acquaintance with him dates from the opening of the Municipal Buildings in Oxford in 1897 by Edward, Prince of Wales, when Captain Holford was Equerry-in-Waiting, and I was holding the office of Sheriff. The Prince and he were two stately figures. The ebullition of youth, of Oxford youth, led to a glorious town and gown, with many broken crowns, not royal be it said, and darkened eyes and a desperate desire to drag the unwilling Prince in a carriage through the mob. We found the Prince a quieter and less exciting way of reaching Christ Church. Perhaps Captain Holford thought they did the thing better at Cambridge but he did not say so, and on their return to Sandringham doubtless the episode was looked upon with kindly and amused eyes. At that time it seemed an unlikely thing that our orbits would ever cross, but in after days he gave me a kind invitation to Westonbirt and year by year the acquaintance warmed into a real friendship. He joined our Society, and was interested in its work. One may call to mind that in 1925 he allowed a meeting of its members to be held in Dorchester House under the Presidency of the Lord Grey of Fallodon. Of course Sir George had met everyone—his princely residence in Park Lane had been occupied by the Shah of Persia (not without detriment to it) and by Whitelaw Reid, the American Ambassador. He was held in the highest respect by Royalty, and was beloved by his servants—to link the two extremes is only the attribute of a noble mind. After the death of his gardener, Chapman, I wrote in sympathy. He replied, " The death of my dear old gardener was indeed a great sorrow both to myself and Lady Holford. He was my life-long friend, and in many ways I find it impossible to replace him." In his young days he was a good walker and much interested in athletics, and for some time he shared the glories and expenses with the Duke of Beaufort of the Badminton Hunt. What a sight was the meet at Silk Wood!—a safe draw. I can see—but not with undimmed vision—the last time when the old Duke in his " Ford " and "Billy" Harford on his sideling steed and all the joyance of horse and dog and hunters and that sweet dewy morning and my host and the Duke and Billy—that hunter who botanised, never to draw Silk Wood again. And Westonbirt and Silk Wood pass into other hands (Sir George had no children). May its possessors preserve its beauties and its treasures for other generations to admire! To Kew, Sir George was a generous contributor. He sent a hundred Hippeastrums in 1895, and in 1913 two hundred, and in 1922 six hundred Orchids, many being Westonbirt hybrid Cattleyas and Laelias.

HOYLE, Dr W. E. Born at Manchester, 1856; died at Porthcawl, February 1926. The son of an engineer connected with Armstrong Whitworth, he studied at Owen's College, and in 1874 gained an exhibition to Exeter College, Oxford. He afterwards became Junior Student at Christ Church taking a first-class in Natural Science. He took his D.Sc., and studying at St Bartholemew's his M.R.C.S. in Medicine. He was demonstrator of Anatomy at Owen's College when he was appointed to the Editorial Staff of the Challenger Expedition, working chiefly on the Cephalopods on which he wrote several memoirs. In 1909 he was appointed the first Director of the then embryonic National Museum of Wales, of which he became a most competent and energetic head. Great as its success has been no one will deny that in a great measure it has been due to his foresight and ability.

PHILLIPS, REGINALD W., D.Sc. Born at Talgarth, Brecon, 1854; died at Leominster, December 2, 1926. He was educated at the Normal College, Bangor, and St John's College, Cambridge. He was appointed Professor of Botany at University College, Bangor, in 1894. He was a distinguished student of the Algae, on which he wrote many papers.

RUSSELL, HAROLD JOHN HASTINGS. Born 1868; died 1926. The son of Lord Arthur Russell and Laura, daughter of the Viscount de Peyrownet, he was educated at Balliol College. He married Lady Victoria Alberta Leveson Gower, daughter of the second Earl Granville. He was called to the Bar, Inner Temple, in 1894, and appointed Recorder of Bedford in 1912. He became a Fellow of the Linnean Society, and wrote a work on The Flea in 1913, and a book "Chalkstream and Moorland" in 1911. Although not a collecting botanist he was a keen lover of nature, and was a constant and careful reader of our *Reports*. He possessed a delightful sense of humour and had a facile pen. He rendered great service in the preliminary work of mapping out desirable Natural History areas for preservation, and was a valued member of that Society. His kindly position and cheery presence will be sadly missed by a large circle of friends.

TURNER, CHARLES. Born 1864; died at Wilmslow, Chester, 1926. He was the Principal of the Manchester School of Pharmacy and was a vice-president of the Manchester Microscopical Society from 1899-1914. He was a keen student of the Fresh Water Algae and Desmids. See *Pharm. Journ.*, September, 18, 1926.

NEW COUNTY AND OTHER RECORDS.

Abbreviations.—*Rep. B.E.C.*=*Report of the Botanical Society and Exchange Club; Trans. Bot. Soc. Edin.*=*Transactions of the Botanical Society of Edinburgh; Wats. B.E.C.*=*Report of the Watson Botanical Exchange Club; Devon. Tr.*=*Transactions of Devonshire Association of Science, &c.; Journ. Bot.*=*Journal of Botany; Nat.*=*Naturalist; N.W. Nat.*=*North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.* = *Wild Flower Magazine*, ed., Mrs Dent; *Fern Gaz.*=*British Fern Gazette*, ed., F. W. Stansfeld; *Rep. Marlb.*=*Report of the Marlborough College Natural History Society; R.I.C.*=*Journal of the Royal Institute of Cornwall;* †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany;* [ ] enclosing a record mean that confirmatory evidence is needed.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species, and we have also to thank the Director of the Royal Botanic Gardens, Kew, Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Dr Ronniger, Dr J. Murr, Dr E. Almquist, M. Jaquet, Mr A. Bennett, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Paul de Riencourt, Mr C. E. Salmon, Mr W. H. Pearsall, Rev. J. Roffey, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

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7. Thalictrum alpinum L. At 2786 feet on Cul Mhor, W. Sutherland, **Miller**.

*9. Anemone nemorosa L. Noirmont, Jersey, **Arsene**.

†11. A. apennina L. Fairy Hill Woods, Glamorgan, **Webb**.

†13. A. fulgens J. Gay. Grassy slope of old quarry, Tenby, Pembroke, **Druce**.

16. Adonis annua L. In great abundance in a cornfield in 1925 at Aston Tirrold, Berks, where large bunches were gathered by children to decorate the village war memorial. In 1926, under another crop, hardly a plant appeared, **Druce**.

22. Ranunculus bulbosus L. With sulphur-yellow petals, Great Salkeld, Cumberland, **Britten**.

24. R. FLAMMULA L. Plants intermediate between var. *latifolius* Wallr. and var. *alismifolius* Glaab. Layter's Green, Bucks, DYMES. Var. PETIOLARIS Marshall. (*scotica*). Mellon Charles, W. Ross, DRUCE.

25. R. REPTANS L. Barron Wood, near Armathwaite, on rocks in the river Eden, BRITTEN.

30. R. SCELERATUS L., forma SUBINDIVISA. With entire leaf-lobes. near Lewes, Sussex, DRUCE.

33. R. OPHIOGLOSSIFOLIUS Vill. Discovered in a locality in White's Bristol area, West Gloucestershire, N. SANDWITH.

38. R. TRICHOPHYLLUS Chaix, var. GODRONII (Gren.). Westbury, W. Gloster, WHITE; Plumpstead, Kent; Barningham, W. Suffolk; Batterley, Durham, FOX; Totternhoe, Beds, SAUNDERS; Loch Winlass, Caithness, DRUCE. Var. RADIANS (Revel). Alum Bay, Isle of Wight, DRUCE.

39. R. DROUETII F. Schultz. Reay, Caithness, DRUCE.

40. R. HETEROPHYLLUS Weber. Brockenhurst, S. Hants, GROVES; Sheepy, Leicester, PAINTER, as *Petiveri*. Var. SUBMERSUS Bab. Ferryhill, Durham, FOX.

41. R. PELTATUS Schrank. Kenfig, Glamorgan, DRUCE.

41. R. PSEUDO-FLUITANS B. & F. Alton, N. Hants, VAUGHAN; Fishbourne, W. Sussex, BURDON; Little Lodge, Essex, FOX.

42. R. BAUDOTII Godr. Grangetown, Cardiff, WADE.

43. R. TRIPARTITUS DC. Dosmery Pool, St Neot, Cornwall, FOX.

47. R. FICARIA L., forma LUXURIANS Moss. Dr Winkler of Breslau, who is making a critical study of this species, thinks the characters of this forma are due to its place of growth. He has the forma growing in the Botanical Gardens at Breslau not among grass but as single individuals in humic soil. The characters are shown when the rhizomes are placed somewhat deeper in the ground. The Breslau plants show abnormal leaves of the same shape as those of the plant he has from La Haule, Jersey.

48. CALTHA PALUSTRIS L. A late-flowering form with small sepals, near Holmsley, New Forest, S. Hants, September 17, 1926, DRUCE.

49. C. RADICANS Forst. By the Feugh, Kincardine, July 1926, DRUCE.

†68. ACONITUM ANGLICUM Stapf. Abundant and luxuriant by the Blyth river, Northumberland, Mrs BURDON & FOGGITT.

†74. Epimedium alpinum L. Near Aberfeldy, Perth, Lady Davy & Foggitt.

77. Castalia alba Wood. In a small lake near Flowerdale, W. Ross, Druce. Var. occidentalis (Ost.). Loch Kinord, S. Aberdeen, with *Nymphaea pumila*; Achilty, Strathpeffer, W. Ross, Druce; near the Kyle of Tongue, W. Sutherland, 1885, Fox.

80. Papaver Rhoeas L., *var. chelidonioides O.K. Beaconsfield, Bucks, Mrs Wedgwood. Var. Hoffmannianum O.K. Hassocks, E. Sussex, Druce.

82. P. Lecoqii Lam. Between Tetbury and Malmesbury, Wilts; Charlton Kings, Gloster, Murray.

88. Meconopsis cambrica Vig. In some quantity by the river near Clatterin' Brig, Kincardine, Druce; Galashiels, Selkirk, Miss Hayward & Druce; Highcup Nick, Westmorland, Foggitt.

89. Glaucium Glaucium (L.). Hythe Quay, Colchester, Brown.

†91. Roemeria hybrida DC. At Splott, Cardiff, Glamorgan, from July to October 4, when we saw it in flower, Miss Vachell, Wade, Smith & Druce; Royston, Herts, with other aliens, Butcher.

102. Capnoides claviculata (L.) Dr. Steep, S. Hants, B. J. Brooke.

125. Radicula amphibia Dr. Coup near Condorrat, Lanark, Grierson; Old Hartlepool, Durham, Fox.

133. Arabis hirsuta Scop. In quantity on black fen peat on a drove from Great Shell Farm, Prickwillow, to Burnt Fen, Cambs, June 20, 1914. With it was *Anthriscus vulgaris* and, in the dykes alongside, *Hydrocharis Morsus-ranae* (flowering). See *Rep. B.E.C.* 1925, p. 1032, l. 9. Little.

†137. A. muralis Bert. Slinfold, Sussex, B. Reynolds.

143. Cardamine amara L. A small-flowered form, St Clement's, Lincoln, Mason.

†151. Alyssum strigosum Sol. (A. montanum M. Bieb.). Burton-on-Trent, Staffs, Druce.

161. Draba incana L. Very dwarf specimens on the sea sand at Mellon Charles, W. Ross, Druce.

162. D. muralis L. Sleightholme Valley, N. Yorks, Foggitt.

163. Erophila verna Meyer. Rare or overlooked. Gairloch, W. Ross, Druce.

167. COCHLEARIA OFFICINALIS L. Gairloch, W. Ross, DRUCE.

170. C. GROENLANDICA L., or what passes for it. Poolewe, W. Ross, DRUCE.

†177. WILCKIA MARITIMA Scop. Railway side, Bradford, Yorks, REYNOLDS; Dundee, R. & M. CORSTORPHINE.

†184. SISYMBRIUM ALTISSIMUM L. Gainsborough, N. Lincs, WILLOUGHBY SMITH; abundant, Burton-on-Trent, Staffs, DRUCE & CURTIS; Burnham, Somerset, MILLER.

†185. S. ORIENTALE L. Burton-on-Trent, Staffs, DRUCE & CURTIS.

†187. S. LOESELII L. Port Meadow, Oxon, GAMBIER PARRY; Burton-on-Trent, Staffs, DRUCE & CURTIS.

192. S. THALIANUM Gay. Gairloch, W. Ross, DRUCE.

197. ERYSIMUM CHEIRANTHOIDES L. Ro Wen, Carnarvon; abundant in a cornfield near Eglwysbach, Denbigh, WILSON.

†200. CONRINGIA ORIENTALIS Dum. Burnham, Somerset, MILLER.

†201. CAMELINA SATIVA Cr. Burnham, Somerset, MILLER.

†214. BRASSICA JUNCEA Coss. Bitterne, S. Hants; Burton-on-Trent, Staffs, DRUCE.

†217. B. ALBA Boiss. Burnham, Somerset, MILLER.

†224. B. INCANA (L.) Doell. Bowling, Dumbarton, GRIERSON; Burton-on-Trent, Staffs, DRUCE.

†228. ERUCA ERUCA (L.) Dr. Dundee, Forfar, R. & M. CORSTORPHINE.

(Dr E. Almquist has kindly determined the following Bursas.)

232. BURSA ABSCISSA (E. At.). Durham; Strachan, Kincardine, DRUCE.

232. B. ANGLICA (E. At.). Coverack, Cornwall; Putney, Surrey, FOX; Barry, Glamorgan; Newtimber, Sussex, DRUCE.

232. B. BATAVORUM (E. At.). Colchester, BROWN; Great Bardfield, Clacton, Essex, 1916, FOX; Newtimber, E. Sussex; Dundee, DRUCE.

232. B. BREMENSIS (E. At.). Reading, Berks; Byfleet, Surrey; Blackwater, N. Hants, DRUCE.

232. B. BRITTONII (E. Ait.). Brimpton, Berks; Marston, Oxon; Sandhurst, Berks; Blackwater, N. Hants, DRUCE.

232. B. CONCAVA (E. At.). Myton, Warwick, BROMWICH; S. Zeal, Devon, FOX; Port Meadow, Oxon; Burton-on-Trent, Staffs, DRUCE.

232. B. DRUCEANA (E. At.). Putney, Surrey, FOX.

232. B. GALLICA (E. At.). Coverack, Cornwall, FOX; Goring, Oxon; Stafford; Arundel, W. Sussex, DRUCE.

232. B. GERMANICA (E. At.). Clacton, N. Essex; Sandhurst, Berks; Burton-on-Trent, Staffs; Durham, DRUCE.

232. B. ORIGO (E. At.). Marcham, Berks, DRUCE.

232. B. PATAGONICA (E. At.). Alridge Station, Staffs; Galashiels, Selkirk; Flowerdale, W. Ross, DRUCE.

232. B. SINUOSA (E. At.). Putney, Surrey, FOX; Sands, W. Ross; Fochabers, Elgin, DRUCE.

232. B. TREVIVORUM (E. At.). Usk, Monmouth, 1890, AUGUSTIN LEY (named by Mott CUNEATA), Wimbledon, Surrey, FOX; Durham; Henley [DD72], Oxon; Gloucester; Perth; Arbroath, Forfar; Strachan, Kincardine; Leith, Midlothian, DRUCE.

232. B. TURONIENSIS (E. At.). Sandhurst, Abingdon, Berks; Blackwater, N. Hants; Henley, Oxon; Byfleet, Surrey; Brentford, Middlesex; Burton-on-Trent, Tamworth Paper Mill, Staffs; Ripon, Yorks; Stirling; Loch Maree, Ullapool, Flowerdale, W. Ross; Falloden, Northumberland, DRUCE.

†240. LEPIDIUM RUDERALE L. Field, Penmaenmawr, Carnarvon, WILSON.

†247. L. DENSIFLORUM Schrad. Derby, Miss COBBE; Godmanchester, Hunts, DRUCE; Grimoldby, Lincs, GOULDING; Burnage, Lancs, BRITTEN; Burton-on-Trent, Staffs, DRUCE & CURTIS; Beaconsfield, Bucks, Mrs WEDGWOOD; Burnham, Somerset, MILLER.

†247. L. VIRGINICUM L. Burnham, Somerset, MILLER.

*252. IBERIS AMARA L. Ancaster quarries, Lincoln, Miss G. BACON.

254. TEESDALEA NUDICAULIS Br. Shingle of the Feugh, Kincardine, DRUCE.

†258. VOGELIA PANICULATA Desv. Burnham, Somerset, MILLER; Campbeltown, Argyll, Miss BROWN.

†263. BUNIAS ORIENTALIS L. Lambridge, Oxon, DRUCE; Broxbourne, Herts, Miss TROWER; Moulsford, Berks, Miss NIELD.

†273. ERUCARIA MYAGROIDES Hal. Giffnock, Renfrew, GRIERSON.

†276. RAPHANUS LANDRA Moretti. Avonmouth, W. Gloster. C. & N. SANDWITH.

†280. GYNANDROPSIS PENTAPHYLLA DC. Dagenham, S. Essex, R. MELVILLE.

288. HELIANTHEMUM HELIANTHEMUM (L.). Strachan, Kincardine, DRUCE.

(Mrs Gregory, with her usual kindness, has reported on the following Violets.)

292. VIOLA MONTANA L. Near Woodhall Spa, Lincoln, Miss STEWART.

296. V. CANINA × RIVINIANA. Newport, Monmouth, DRUCE.

297. V. LACTEA Sm. Keys' Corner, Chatteris, Cambs. FRYER.

298. V. ODORATA L. A curious form with small, irregularly shaped flowers, the petals being narrower and wavy, and of a dingy white, occurred at Stansteadbury, Miss TROWER. Var. SUBCARNEA (Jord.) Parl. Pool Bottom, Oxon, DRUCE; Wyke-Benthall, Salop, Mrs W. R. ALLEN. Var. DUMETORUM Jord. Mouth of Avon, Ayrshire, GRIERSON. Var. IMMACULATA Greg. Fairwater, Glamorgan, in plenty, Mrs O'CALLAGHAN & Miss VACHELL.

299. V. HIRTA L., var. HIRSUTA Lange. Besilsleigh, Berks, DRUCE. Forma RUDICAULIS, all parts shaggy except peduncles, Druridge Bay, Northumberland, FOX. Var. FOUDRASII (Jord.). Pool Bottom, Oxon, DRUCE; Aldbourne, Wilts, Miss TODD. Var. INCONCINNA J. Briquet. Headley Lane, Aldbourne, Wilts, Miss TODD; Surrey, FOX. Var. PINETORUM Wiesb. Carham, Northumberland, FOX. Var. PROPERA (Jord.). Pool Bottom, Oxon, the flowers of a lovely purplish colour, DRUCE. Var. OENOCHROA Gill. Aldbourne, Wilts, Miss TODD. × ODORATA. Shincliffe, Durham, 1842, ANDREWS in *Hb. Druce;* Aldbourne, Wilts, Miss TODD.

(Dr Drabble has kindly determined the following Pansies.)

304. VIOLA ANGLICA Drabble. St Margaret's Bay, Kent, DRUCE.

304. V. AGRESTIS (Jord.). Perranarworthal, Cornwall, F. H. DAVY; Kingston Vale, Surrey, FOX; Alresford, N. Hants, DRUCE.

304. V. ARVATICA Jord. St Minever, Cornwall, FOX; Goadly Marwood, Leics, HORWOOD.

304. V. CONTEMPTA Jord. Wallingford, Berks, DRUCE; Stone, Kent, MARRIOTT.

304. V. MONTICOLA Jord. Saintfield, Co. Down, 1910, C. H. WADDELL as *lepida*.

304. V. RURALIS Jord. Wallingford, Berks, DRUCE.

304. V. SEGETALIS Jord. Osney, Oxon; Dumfries, FOX.

304. V. DESEGLISEI Jord. Hanslope, Bucks; Burton-on-Trent, Staffs; Barry, Forfar, DRUCE.

304. V. VARIATA Jord. Big Sand, W. Ross; Norwick, Unst, Zetland, DRUCE, as *Lloydii*; Sedbergh, Yorks, TRAPNELL.

304. V. LEPIDA Jord. Bawtry, Yorks, WEBSTER; Feugh, Kincardine, DRUCE.

304. V. LEJEUNEI Jord. Greenford Green, Middlesex, 1908, LOYDELL; Hanslope, Bucks, DRUCE.

304. V. LLOYDII Jord. Lough Gilly, Armagh; Hanslope, Bucks; Galashiels, Selkirk, DRUCE; Oldworth Mill, Cheshire, WOLLEY-DOD, as *carpatica;* Llangammarch, Brecon, as *saxatilis;* Brilley, Hereford, A. LEY; Finchingfield, N. Essex, VAUGHAN.

316. POLYGALA DUBIA Bellynck. Wareham, Dorset, Miss TODD; near Feugh, Kincardine, DRUCE.

318. DIANTHUS DELTOIDES L. Yetholm, Roxburgh, Miss HAYWARD.

†331. SAPONARIA VACCARIA L. Burnham, Somerset, MILLER.

†332. S. OFFICINALIS L., flore pleno. Bramdean, Hants, STEPHENS, ex WEBSTER.

†339. SILENE CONOIDEA L. Bristol, W. Gloster, C. & N. SANDWITH.

343. S. ANGLICA L. With pink petals near to *gallica*, Corfe, Dorset, Miss TODD.

359. LYCHNIS ALBA × DIOICA. Sedbergh, Yorks; Mathry, Pembroke, TRAPNELL.

†367. CERASTIUM TOMENTOSUM L. Maritime shingle, Snettisham, Norfolk, J. GILMOUR.

*373. C. SEMIDECANDRUM L. Big Sand, W. Ross, DRUCE.

374. C. TETRANDRUM Curt. Sandhills, Little Sands, W. Ross, DRUCE.

377. STELLARIA AQUATICA Scop. Coxwold, N. Yorks, FOGGITT.

378. S. NEMORUM L. Hackfall, W. Yorks, FOGGITT.

391. ARENARIA SERPYLLIFOLIA L., var. MACROCARPA. Helston, Cornwall, Major ORME.

*392. A. LEPTOCLADOS Guss. Melmerby, Cumberland, MASON.

394. A. TENUIFOLIA L. Broughton, Hants, Miss H. M. SALMON.

398. A. SEDOIDES Dr. Near summit of Cul Mhor, W. Sutherland. MILLER.

399. SAGINA NODOSA Fenzl. Big Sand, W. Ross, also as the var. MONILIFERA, DRUCE.

401. S. SUBULATA Presl. Sea cliff, New Gate, Pembroke, TRAPNELL.

405. S. CILIATA Fr. Wivenhoe, N. Essex [2318], BROWN, teste THELLUNG. Var. FILICAULIS (Jord.). Beaconsfield, Bucks, Mrs WEDGWOOD.

406. S. APETALA Ard. Exeter, FOX. Var. BARBATA. Berry Head, Devon, DRUCE.

408. S. PROCUMBENS L., var. DAVIESII Dr. Danby Beacon, Yorks, B. REYNOLDS.

412. SPERGULARIA MEDIA Presl, var. APTERA (Marshall). Gairloch, W. Ross, 1926, DRUCE.

418. CLAYTONIA SIBIRICA L. Damp hedge-bank, far removed from habitations, Letterkenny, Donegal, F. R. BROWNING.

419. C. PERFOLIATA Donn. Boar's Hill, Berks, 1926, Miss OWEN.

*424. ELATINE HEXANDRA DC. In a lake, West Denbigh, DALLMAN & WILSON in *N.W. Nat.* 215, 1926; in great plenty and in beautiful condition in Llyn Mynydd-y-Geer, Glamorgan. Shown me in October by Miss Vachell. It was previously discovered there by R. L. Smith and A. E. Wade.

435. HYPERICUM QUADRANGULUM L. Kingston, Cambridge, A. H. EVANS.

†447. LAVATERA THURINGIACA L. Thompson, W. Norfolk, C. & N. SANDWITH.

†452. MALVA NICAEENSIS All. Fowey, Cornwall, TRESIDDER; Cardiff, Glamorgan, DRUCE.

†476. GERANIUM NODOSUM L. Roadside near Kilburn, N. Yorks, FOGGITT.

488. G. PURPUREUM Vill. Erwood, Brecon, Mrs WEDGWOOD.

†506. OXALIS STRICTA L. Henfield, Sussex, 1925. Miss COTTES.

†511. IMPATIENS BIFLORA Walt. Tributary of the Colne, between Aldenham and Pricket Wood, Herts, E. C. CRUTWELL.

†513. I. GLANDULIFERA Royle. Tamebridge, Stafford, abundant, CURTIS & DRUCE; banks of Cod Beck, Thirsk, N. Yorks, FOGGITT & DRUCE.

†514. CITRUS AURANTIUM L. Seedlings, 6 inches high, flowering on Brackenridge Coup, Lanark, GRIERSON.

517. EVONYMUS EUROPAEUS L., var. LEUCOCARPUS DC. Near Downs School, Colwall, Hereford, F. M. DAY.

†518. RHAMNUS FRANGULA L. Mouth of Avon, Lanark, GRIERSON.

†521. VITIS VINIFERA L. Seedlings, 6 inches high, Kilsyth, Stirlingshire, GRIERSON.

†522. V. THUNBERGII (S. & Z.) Dr. (*Ampelopsis Veitchii*). Barry, Glamorgan, DRUCE, SMITH & WADE.

†525. ACER PLATANOIDES L. Near Boxhill, Surrey, DRUCE.

533. GENISTA ANGLICA L., inermis. The young plant was spineless but later on it developed spines. Cheviots near Wooler, Miss WOODHAM.

538. ULEX GALLII Planch. Ascends to 1930 feet on Tal-y-Fan, Carnarvon, WILSON.

*†562. MEDICAGO FALCATA L. Stokes Bay, S. Hants, C. W. GIBSON; Burton-on-Trent, Staffs, DRUCE & CURTIS.

†564. M. VARIA Martyn, var LILACEA Hy. Silloth, Cumberland. BRITTEN.

†572. M. TRUNCATULA Gaertn. Pevensey, E. Sussex, Miss VACHELL.

†574. M. TUBERCULATA Willd. Cardiff Dock, Glamorgan, MELVILLE.

†579. M. HISPIDA Gaertn., var. CONFINIS Burn. Hythe Quay, Colchester [1789, 1790], BROWN.

†583. M. ECHINUS DC. Garden ground, Putney, Surrey, FOX.

*†596. MELILOTUS ARVENSIS Wallr. Burton-on-Trent, Staffs, DRUCE.

598. TRIFOLIUM MEDIUM L. Enderby, Leicester, BEMROSE.

†605. T. lappaceum L. Fulford, Yorks, **Britten**.

†607. T. purpureum Lois. Bristol, W. Gloster, **C. & N. Sandwith**.

†616. T. echinatum M.B. (*supinum* Savi). Bristol, W. Gloster, **C. & N. Sandwith**.

†622. T. resupinatum L. Gas works, Hitchin, Herts, **M. Brown**, ex **Little**.

†627. T. hybridum L. Aultbea, W. Ross, **Druce**. Var. phyllanthum. Hinton Amiral, S. Hants, **Druce**.

632. T. glomeratum L. Budleigh Salterton, Devon, Major **Orme**.

†644. Lotus Tetragonolobus L. Burton-on-Trent, Staffs, **F. W. Andrews** in *N.W. Nat.* 214, 1926.

†645 (2). L. siliquosus L. Sheppey, E. Kent, **A. E. Davies**; West Mersea, N. Essex, **J. P. Brown**.

648. L. tenuifolius (L.) = L. tenuis Kit., var. longicaulis Martr.-Don.). Hythe, Colchester, 1924, **Druce**, teste **P. de Riencourt**.

†649. Dorycnium herbaceum Vill. Sheppey, E. Kent, **A. E. Davies**, ex **St J. Marriott**.

†652. Colutea arborescens L. Tilbury, Essex, **Melville**.

†657. Astragalus boeticus L. Par, Cornwall, **Medlin**.

†667. Coronilla scorpioides Koch. Par, Cornwall, **Medlin**; Burton-on-Trent, Staffs, **Druce**.

†678. Vicia tenuifolia Roth. Seer Green, Bucks, **W. N. Jones**.

680. V. Orobus DC. Unthank, E. Cumberland, **Foggitt**.

†680 (2). V. benghalensis L. Stansteadbury, Herts, Miss **Trower**.

†681. V. villosa Roth. Leicester, **Bemrose**; Robroyston, Lanark, **Grierson**.

†690. V. narbonensis L. Henfield, Sussex, Miss **Cottes**.

691. V. lutea L. †Burton-on-Trent, Staffs, **Curtis**; Henfield, Sussex, Miss **Cottes**; Littlehampton Golf Course, Sussex, **Reynolds**.

†697. V. sativa, L., var. nemoralis Pers. Reading, Berks, **Druce**; Coniston, Grassington, Yorks, **Pickard**. Var. obovata Gaud. Swanage, Dorset, Miss **Todd**; Mellon Charles, W. Ross, 1926, **Druce**.

698. V. angustifolia (L.), var. acuta Pers. Henley-on-Thames, Oxon, Druce. Var. cordata (Wulf.). Clacton. Essex, Fox. Var. roseiflora R. & F. Fl. Fr. v., 213. Jacobstow, near Okehampton, Devon, Mason.

706. V. gracilis Lois. *Tredudwell, Cornwall (Mrs Pennycoste's locality), Rilstone; Langton Matravers, Dorset, Miss Todd; near Swyre, Dorset, A. W. Graveson; Comberton, Cambs, Butcher & Foggitt.

†711. Lathyrus tuberosus L. *Shobnall Brewery Siding, Burton-on-Trent, Staffs, Druce & Curtis; *Stokes Bay, Hants, C. W. Gibson; *ditch round Martello Tower, Folkestone, E. Kent, Dr Eagles.

†718. L. hirsutus L. Stokes Bay, Hants, C. W. Gibson.

†723. L. Clymenum L. Glasgow, Lanark, Grierson.

725. L. Nissolia L. Langton Matravers, Dorset, Mrs Dickenson.

726. L. Aphaca L. Broughton, Hants, Miss H. M. Salmon.

*777. Rubus villicaulis W. & N. Gairloch, W. Ross, Druce.

*778. R. Selmeri Lindeb. Selkirk, Druce.

*817. R. furvicolor Focke. Fochabers, Elgin, Druce.

*834. R. melanodermis Focke. Looe, Cornwall, Riddelsdell in *B.J.C.* 102, 1926.

*847. R. Lintoni Focke. West Looe Valley, Cornwall, Riddelsdell in *B.J.C.* 102, 1926.

*857. R. cognatus N. E. Br. Strachan, Kincardine, Druce. New to Scotland.

*857. R. Koehleri W. & N. Strachan, Kincardine, Druce.

†896. Potentilla intermedia L. Dried bed of duck pond, Berechurch Park, N. Essex, Brown.

899. P. Crantzii Beck. Maize Beck, Westmorland, Foggitt.

(The Alchemillas have been determined by M. Jaquet.)

909. Alchemilla alpestris Sch. Strachan, Kincardine; Kirbister, Orkney; Loch Maree, W. Ross; Dunning, Perth; Patterdale, Westmorland; Hopetoun, Linlithgow; Selkirk; Blairgowrie, E. Perth, Druce.

909. A. pratensis Sch. Strachan, Kincardine; Tring, Bucks & Herts; Fochabers, Elgin; Lawers, M. Perth; Albrighton, Shropshire;

Huntly, Alford and Corgarff, N. Aberdeen; Basildon, Yorks; High Force, Durham; Dollar Law, Peebles; Selkirk; Bridge of Dun, Forfar; Ballater, S. Aberdeen; Arisaig, Westerness; Accrington, Lancashire; Fallodon, Northumberland; Dunning, Perth; Braemore, W. Ross, **Druce**; Athelstanes Wood, Hereford, **Ley**.

909. A. ACUTIDENS Buser. Balmuto, Fife, August 1870, Col. F. STRATTON, as *vulgaris*. Probably the earliest British example.

*909. A. TENUIS Buser. Box Wood, Herts, **Little**, as *vulgaris*.

909. A. MINOR Huds. Finchingfield, N. Essex, **Vaughan**; Stanner Rocks, Radnor; Tingwall, Wadbister, Zetland; Matlock, Derby; Beechwood, Herts, **Druce**.

*909. A. SUBCRENATA Buser. Near Tintern, W. Gloster, **Druce**.

911. A. ALPINA L. Our British plant is the restricted A. GLOMERATA Tausch.

923. ROSA ARVENSIS × SYSTYLA. Bigbury, S. Devon, **Marshall**.

925. R. STYLOSA Desv., var. SYSTYLA Bast. Exeter, **Druce**; Monacum, Cornwall, **Fox**. Var. ELLIPTICIFOLIA Rouy. Odiham, N. Hants. Miss C. E. **Palmer**. *Var. VIRGINEA Rouy. Chatteris, Hunts; Beaconsfield, Bucks, **Druce**.

926. R. CANINA L., var. SENTICOSA W.-D. Near Whitby, N.E. Yorks, **Snowden**, ex **Reynolds**. Var. SYLVULARUM, f. PARISIENSIS. Purley, Surrey, 1887, E. DE CRESPIGNY, as *dumalis*, var. *insignis* (Déség. & Rip.); Blairadam, &c., Fife, with many other vars., **Matthews** in *Trans. Bot. Soc. Edin.* 222, 1926.

926. [R. SENTICOSA W.-D.], f. MUCRONULATA W.-D. Fulmer, Berks, **Druce**. Var. CURTICOLA Rouy. Whittlebury, Northants, **Druce**.

932. R. DUMETORUM Thuill., var. HEMITRICHA (Rip.). Great Crosthwaite, Cumberland, 1882, **Bailey**, as *frondosa*. f. URBICA towards SEMIGLABRA. Hertford, 1846, **Ansell**. f. SEMIGLABRA. Coverack, Cornwall, **Fox**. Var. CALOPHYLLA Rouy. Newton, Hereford, **Ley**, as *frondosa*. Var. *mercica* W.-D. Darley Dale, Derby, **Bailey**, as *caesia* Sm.

933. R. DESEGLISEI Bor., var. INCERTA. Wensleydale, York, 1887, **Cotton**, as *frondosa*.

934. R. GLAUCA Vill., var. REUTERI Godet. Near Dovedale, a beautiful form, perhaps deserving a name, **Druce**; Oyce of Firth, Orkney, 1880, **Syme**; Hognaston, Derby, W. R. **Linton**; Burntisland, &c., Fife, **Matthews**, *l.c.* Var. SUBCANINA (Christ). St Andrews, Fife, **Matthews**. *l.c.* Var. STEPHANOCARPA R. Kell. St Andrews, Fife, **Druce**; Killin,

Perth, E. F. LINTON, as *marginata*; Solihull, Warwick, BAGNALL, as *marginata*.

935. R. CORIIFOLIA Fr., var. SUBCORIIFOLIA. See *Rep. B.E.C.* 1890. Jamestown, E. Ross, BAILEY; Crook of Devon, Fife. MATTHEWS, *l.c.* Var. FRUTETORUM. Braemar, S. Aberdeen [2938], E. S. MARSHALL; Milnathort, Fife. MATTHEWS, *l.c.* Var. SUBCOLLINA (Christ). Bradley, Derby, 1888, W. R. LINTON; Milnathort, Fife, MATTHEWS, *l.c.*

937. R. EGLANTERIA L., var. APRICORUM. Newburgh, and var. ECHINOCARPA. Inverkeithing, Fife, MATTHEWS, *l.c.* × SPINOSISSIMA. Hedge near Selkirk, shown me by Miss HAYWARD, DRUCE.

940. R. TOMENTELLA Lam. Christ's Hospital, Sussex, REYNOLD. Var. ROTHSCHILDII (Dr.). Malden, Surrey [102], BRITTON.

941. R. TOMENTOSA Sm., var. PSEUDO-CUSPIDATA (Crép.). Strachan, Kincardine, 1926, DRUCE; Burntisland, Fife, MATTHEWS, *l.c.* Var. EGLANDULOSA W.-D. Loch Ranza, Arran, Mrs WEDGWOOD; Milnathort, Fife. MATTHEWS, *l.c.*

941. R. SHERARDI Woods. Near Whitby, N.E. Yorks, SNOWDEN, ex BUTCHER.

943. R. VILLOSA L. = MOLLIS Sm. Ovington, Hants, H. & Miss A. CONYBEARE. The specimen is incomplete, but it almost certainly belongs here. Var. SUBMOLLIS (Ley). Glencairn, Dumfries, FOX; Milnathort, Fife. MATTHEWS, *l.c.*; Flotta, Orkney, JOHNSTON. Var. PSEUDO-RUBIGINOSA. Teesdale, Durham, 1893, FOX, as *sepium*.

944. R. POMIFERA Herrm. St David's, Fife, MATTHEWS, *l.c.*

950. R. SPINOSISSIMA L. Hedge garden, Barnham St Gregory, W. Suffolk, H. D. HEWETT & BROWN. The planted form.

954. PYRUS COMMUNIS L. Chepstow, Monmouth; Kemble, Bucks, DRUCE.

†959. P. INTERMEDIA Ehrh. Banchory, Kincardine; Gairloch, W. Ross, DRUCE; Pilmoor, N. Yorks; by the Garry, Struan, Perth, BUTCHER & FOGGITT.

†972. COTONEASTER MICROPHYLLA Wall. Bird sown. In turf on limestone downs near Blore, Staffs, DRUCE; top of S. Downs north of Arundel, Sussex, B. REYNOLDS.

†972. C. SIMONSII Baker. Flowerdale, W. Ross; Banchory, Kincardine, DRUCE.

*982. SAXIFRAGA GRANULATA L. On both banks of the Exe both above and below Tiverton, Devon; on the banks of the Burle near Dulverton Station, W. Somerset, Col. G. WATTS.

987. S. HIRCULUS L. Harthope Fell, Weardale; Mickle Fell, Teesdale, FOGGITT.

†1003. RIBES RUBRUM L., var. SATIVUM (Reichb.). South Burn of Quoys, Hoy, Orkney, JOHNSTON.

†1004. R. SANGUINEUM Pursh. Banchory, Kincardine, DRUCE.

*1006. TILLAEA MUSCOSA L. Stapleford Wood, Notts, Miss BACON.

†1007 (10). TETRAGONIA EXPANSA Thunb. Salt marsh near Southport, Lancs, T. W. HOLDEN.

†1016. SEDUM ALBUM L. Bamborough Castle, Northumberland, DRUCE & Visct. GREY.

†1029. ×DROSERA OBOVATA M. & K. Bewley Down, Devon, with its parents, and *D. anglica*, D. WATSON in *Devon Assoc. Rep.* No. 17.

1043. LYTHRUM SALICARIA L. Beauly, Easterness, J. A. WEBB.

*†1045. L. HYSSOPIFOLIA L. Burton-on-Trent, Staffs, DRUCE & CURTIS; Heyshot, W. Sussex, 800 feet, TRAPNELL.

1047. EPILOBIUM HIRSUTUM L., var. VILLOSISSIMUM Koch. Corfe, Dorset, Miss TODD.

1050. E. LAMYI Schultz. Bagley Wood, Berks, DRUCE.

*1053. E. LANCEOLATUM S. & M. Fyfield, Essex, T. A. WILLIAMS.

1054. E. MONTANUM × OBSCURUM. Hailey, Oxon, DRUCE.

1078. HYDROCOTYLE VULGARIS L. Ascends to 1750 feet on Tal-y-fan, Carnarvon, WILSON.

†1082. ASTRANTIA MAJOR L. In a ditch near Burton-on-Trent, Staffs, CURTIS. Var. INVOLUCRATA Koch. Cambuslang, Lanark, GRIERSON.

†1088. BUPLEURUM FRUTICOSUM L. Garden escape, Goodrington, near Paignton, S. Devon, F. M. DAY.

1090. B. ROTUNDIFOLIUM L. Fawley, Bucks, R. MACKENZIE; arable, High Down, Herts, LITTLE.

†1101. AMMI MAJUS L. Lucerne field, Cuxton, Kent, Miss C. STEVENS; garden weed, Edenbridge, Kent, Mr JUSTICE TALBOT.

†1109. **Prionitis Falcaria** Dum. A quantity by footpath from Hemsley to Caistor, E. Norfolk, C. & N. **Sandwith**.

1126. **Chaerophyllum sylvestre** (L.), var. **angustisectum** Dr. Fochabers, Elgin; Strachan, Kincardine; Strath, W. Ross; Beauly, Easterness, **Druce**.

1134. **Oenanthe crocata** L. Loch Awe, Argyll, where a cow was killed from eating it, Mrs **Guthrie**. Var. **tenuifolia** Dr. Heatherleigh, Devon, **Mason**.

†1153. **Heracleum villosum** Fisch. In some quantity at Dagenham, S. Essex, **Melville**.

1169. **Caucalis nodosa** Scop., var. **pendunculata** Dr. Mullion, Cornwall, Mrs **Knowling**.

†1171. **C. latifolia**. Burton-on-Trent, Staffs, **Curtis**; Colchester, G. C. **Brown**.

1172. **Hedera Helix** L., var. **borealis** Dr. Durham, **Fox**; Strachan. Kincardine, **Druce**.

1178. **Sambucus nigra** L., var. **laciniata** L. On waste ground. Dundee, **Druce** & **Corstorphine**.

1192. **Galium boreale** L., var. **stenophyllpm** Dr. On sea-sand, Mellon Charles, W. Ross; Teesdale, Durham; Grassington, Yorks; Inchnadamph, W. Sutherland; Ballater, S. Aberdeen; Ballantrae, Ayrshire, **Druce**. Var. **diffusum** Dr. Glen More, Easterness, **Druce**.

1193. **G. ochroleucum** Wolf. Lawers, M. Perth, **Gambier Parry**; St Ouen's, Jersey, **Foggitt**.

*1198. **G. debile** Desv. Sands of Barry, Forfar, **Druce**.

†1201. **G. tricorne** Stokes. Burnham, Somerset, **Miller**.

*1204. **G. anglicum** Huds. Bedford Purlieus, Northants, J. **Gilmour**. An excellent addition to the Flora of that county.

†1210. **Asperula arvensis** L. Beck Mill, Skirwith, Cumberland, **Britten**.

†1211. **A. ciliata** Rochel. Polurrian, near Mullion, Cornwall, *R.I.C.* 103, 1926.

†1218. **Valerianella pyrenaica** L. Near Aberargie, M. Perth, **Druce**; between Tiverton and Bampton, Devon, brought down the stream from Dalveston, Col. G. **Watts**.

†1242. GRINDELIA SQUARROSA Dunal. Port Meadow. Oxon, GAMBIER PARRY; Dundee, Forfar, R. & M. CORSTORPHINE.

1243. SOLIDAGO VIRGAUREA L., var. ANGUSTIFOLIA Koch. Loch Maree, W. Ross, DRUCE; Bunerana, Donegal, FOX. Var. PLUKENETIANA Dr., f. ACUTIFOLIA Dr. Meal Gruad, M. Perth, F. W. SANSOME.

1248. BELLIS PERENNIS L., var. DISCOIDEA. Burton Bradstock, Dorset, Miss BARBARA BUCKLER.

1258. ASTER TRIPOLIUM L., var. GLABER Bolzon. Aultbea, W. Ross, DRUCE; Castle Gregory, Co. Kerry. TRAPNELL.

1261. ERIGERON ACRIS × CANADENSE = E. HULSENI. Sandy field between Elveden and Icklingham, W. Suffolk, C. & N. SANDWITH.

†1264. E. BONARIENSIS L. (LINIFOLIUS). Avonmouth, W. Gloster, C. & N. SANDWITH; Giffnock. Renfrew, GRIERSON.

†1264. E. MUCRONATUS DC., var. Abingdon stoneworks, by Thames. Berks, DRUCE.

1269. FILAGO MINIMA Fr. Luxuriant specimens on the Culbin Sands. Elgin, DRUCE & Miss HAYWARD.

†1271. ANAPHALIS MARGARITACEA C. B. Clarke. Strath, Gairloch, W. Ross, DRUCE.

†1291. AMBROSIA ARTEMISIFOLIA L. Silloth, Cumberland, Mrs HEWART, ex BRITTEN.

†1295. XANTHIUM SPINOSUM L. Burton-on-Trent, Staffs, DRUCE.

†1302. HELIANTHUS DIFFUSUS Sims. Newlands, Glasgow, GRIERSON.

†1311. BIDENS PILOSA L. also as the discoid form. Rochdale, Lancs, H. BARTON, ex BRITTEN.

†1315. HEMIZONIA PUNGENS Torr. & Gray. Colchester. Essex, DRUCE & BROWN [Nos. 2366, 2367]; Par, Cornwall, THURSTON.

†1317. H. KELLOGGII Greene. Burton-on-Trent, Staffs, September 1926, DRUCE & CURTIS.

†1320. SCHKUHRIA BONARIENSIS Hook. & Arn. Bristol, W. Gloster, C. & N. SANDWITH.

†1322. TAGETES MINUTA L. Avonmouth, W Gloster, C. & N. SANDWITH.

†1323. ANACYCLUS RADIATUS Lois. and A. CLAVATUS Pers. Near Glasgow, **GRIERSON.**

1329. ACHILLEA MILLEFOLIUM L., var. LANATA Koch. Mellon Charles, W. Ross, **DRUCE.**

†1340. ANTHEMIS COTA L. Bristol, W. Gloster, C. & N. SANDWITH.

1343. A. ARVENSIS L. Burnham, Somerset, **MILLER.**

†1355. CHRYSANTHEMUM PARTHENIUM Bernh. Strachan, Kincardine, DRUCE.

†1362. MATRICARIA SUAVEOLENS Buch. Gainsborough, N. Lincs, Dr W. W. SMITH; Hitchin, Herts, 1925, LITTLE; Burton, Staffs, DRUCE.

†1368. ARTEMISIA CAMPESTRIS L. Waste ground, roadside, Putney Vale, Kingston Hill, Surrey, Misses L. & M. **DRUMMOND.**

1369. A. DRACUNCULUS L. Blundellsands, Lancs, **TRAVIS**; Christ Church, Hants, L. B. **HALL.** Det. **THELLUNG.**

1380. A. BIENNIS Willd. Beaconsfield, Bucks, Mrs WEDGWOOD; Abingdon, Berks, GAMBIER PARRY; Ware, Herts, DRUCE; Burton-on-Trent, Staffs, DRUCE & CURTIS.

1393. SENECIO AQUATICUS Hill, var. PENNATIFIDUS Gren. & Godr. Cow Meadow, Northants; Holmsley, S. Hants; Durham; Strath, W. Ross; Esthwaite, S. Lancs, **DRUCE.**
× JACOBAEA, Aultbea, W. Ross, DRUCE.

1394. S. JACOBAEA L., var. CONDENSATA Dr. Mellon Charles, W. Ross, DRUCE.

1396. S. SQUALIDUS × VULGARIS, with both parents. Gwersyllt, Denbigh, JONES.

*†1399. S. VISCOSUS L. Burton-on-Trent, Staffs, **DRUCE & CURTIS.**

†1402. S. CINERARIA DC. Cliffs above Alum Chine, Isle of Wight, Rev. E. C. CRUTWELL.

†1410. CALENDULA OFFICINALIS L. and C. ARVENSIS L. Strath, W. Ross, DRUCE.

1428. CIRSIUM HETEROPHYLLUM Hill. Grantown, Elgin, TAVERNER.

1433. C. ARVENSE × PALUSTRE. Penyvae, Glamorgan, Miss VACHELL.

1446. SERRATULA TINCTORIA L., var. INTEGRIFOLIA Koch. Near New Ross, Wexford, PHILLIPS & STELFOX in *Ir. Nat.* 78, 1926.

1451. CENTAUREA NEMOROSA Jord., var. PALLENS (Koch). *C. nigra*, var. *pallida* Wk. & Lange. *C. consimilis* Boreau. Guernsey, Mrs M'CREA.

†1453. C. MONTANA L. Fine plants by the Lunan, Forfar, R. & M. CORSTORPHINE.

†1463. C. MELITENSIS L. Burton-on-Trent, Staffs, DRUCE; L'Ancresse Common, Guernsey, Miss VACHELL, &c.

†1477. CARTHAMUS TINCTORIUS L. Waste ground, Manchester, Lancs, Mr JUSTICE TALBOT.

1505. HIERACIUM PILOSELLA L., var. CONCINNATUM F. J. H. Mellon Charles, W. Ross, DRUCE.

†1510. H. PRAEALTUM Vill., var. BAUHINI. Near Hungerford, Berks, HURST.

†1512. H. AURANTIACUM L. Galashiels, Selkirk, quite established, Miss HAYWARD & DRUCE; Petersfield, S. Hants, B. J. BROOKS; Kilmalcolm, Renfrew, Mrs WEDGWOOD.

1513. H. ANGLICUM Fr., var. ACUTIFOLIUM Backh. Heilim Ferry, Sutherland, FOGGITT.

1513. H. CALCARATUM (Lint.). Silverdale, Lake Lancs, DRUCE.

1513. H. CERINTHIFORME Backh. Near Elphin, W. Ross, DRUCE; Scarsdale, Westmorland, BRITTEN.

1514. H. LANGWELLENSE F. J. H. Smoo, West Sutherland, DRUCE.

1521. H. GRANITICOLUM W. R. L. Glen Lui Beg, S. Aberdeen, FOGGITT.

1529. H. CHRYSANTHUM Backh., var. MICROCEPHALUM Backh. Glen Lui Beg, S. Aberdeen, FOGGITT.

1540. H. CRINIGERUM Fr. Melvich, W. Sutherland, DRUCE.

1547. H. SOMMERFELTII Lindeb. Llandecwyn, Merioneth, DRUCE, teste ROFFEY.

1550. H. BRITANNICUM F. J. H. Humphrey Head, Westmorland, Miss GRENFELL.

1558. H. SCOTICUM F. J. H. Cnochan, W. Ross, DRUCE.

1559. H. PROXIMUM F. J. H. Berriedale, E. Sutherland, DRUCE.

1561. H. CLOVENSE Lint. Ben Vrackie, E. Perth, FOGGITT.

1564. H. STENOLEPIS Lindeb. Loch Erribol, W. Sutherland, FOGGITT.

1565. H. SUBTENUE (W. R. L.). Trowie Glen, Orkney, JOHNSTON; Scarsdale, Westmorland, BRITTEN.

1568. H. LUCIDULUM Ley. Lambridge, Henley, Oxon, DRUCE. Thought by DAHLSTEDT to be allied to *melanolepis*. Symonds Yat, W. Gloster, DRUCE. Thought by DAHLSTEDT to be allied to *lacerifolium* Almq.

1570. H. VARIICOLOR Dahlst. Boston Spa, Yorks, BRITTEN.

1571. H. CILIATUM Almq. Glen Dole, Forfar, FOGGITT.

1577. H. RUBIGINOSUM F. J. H. Reay, Caithness, DRUCE.

1581. H. SAGITTATUM Lindeb., var. LANUGINOSUM Lönnr. Kettlewell, N.W. Yorks, FOGGITT.

1585. H. EXPALLIDIFORME Dahlst. Strachan, Kincardine; Gairloch, W. Ross, DRUCE. DAHLSTEDT and ROFFEY agree.

1598. H. DURICEPS F. J. H. Stonehaven, Kincardine, DRUCE. Var. CRAVONIENSE (F. J. H.). St Mary's Abbey, Yorks, BRITTEN.

1602. H. EUSTOMON Lint. Tenby, Pembroke, DRUCE.

1609. H. CHLOROPHYLLUM Jord. Llandrindod, Radnor, DRUCE.

1609. H. GRANDIDENS Dahlst. South Molton, N. Devon, FOGGITT; modification at Goring, Oxon, DRUCE; Sussex, Miss COTTES.

1609. H. DEDUCTUM Sudre. Russell's Water Common, Oxon, DRUCE; Bylands, Abbey Wise, York, BRITTEN.

1613. H. LEVIGATUM Willd. Glen Spean, Westerness, DRUCE.

1614. H. DIAPHANOIDES Fr. Crowthorn, Berks, but an unusual form, DRUCE.

1629. H. TRIDENTATUM Fr., var. ACRIFOLIUM Dahlst. Selham, Sussex, DRUCE.

1632. H. STRICTUM Fr., var. PSEUDAURATUM Zahn (teste ROFFEY). Killin, M. Perth, Rev. R. J. BURDON. DAHLSTEDT refers it to a modification of *polycomum*. Var. RETICULATUM Lindeb. Scrabster, Caithness, FOGGITT. Var. OPSIANTHUM Dahlst. Glen Lyon, M. Perth, FOGGITT.

1633. H. LATOBRIGORUM Zahn. Harlech, Merioneth, DRUCE. DAHLSTEDT says it is very nearly allied to *polycomum* Dahlst.

1637. H. BOREALE Fr., var. VAGUM (Jord.). Pwllheli, Carnarvon, BAILEY, as *corymbosum*.

1638. H. UMBELLATUM L., var. FILIFOLIUM Backh. Birkdale, Lancs, BAILEY. Var. CORONOPIFOLIUM Fr. Bohemia, Isle of Wight, STRATTON. Var. PAUCIFLORUM Hartm. Carr Bridge, Easterness, FOGGITT. Var. LINARIIFOLIUM Wallr. Gilly Tresamble, Cornwall, FOGGITT.

1644. LEONTODON NUDICAULIS Banks, var. LEIOLENA Bisch. Walton-on-Naze, N. Essex, BROWN. Var. LASIOLENA Dr. Swanage, Dorset, Miss TODD.

(The Taraxaca have been identified by Herr H. Dahlstedt to whom we are much indebted.)

1645. TARAXACUM BIFORME Dahlst. (VULGATA.) Adderbury, Oxon [D.52], DRUCE.

1645. T. BRACHYGLOSSUM Dahlst. (ERYTHROSPERMA.) Byfleet, Surrey; Kenfig, Glamorgan; Tenby, Pembroke; Strath, W. Ross; Strachan, Kincardine; Barry, Forfar; Alyth, E. Perth, DRUCE; Clifton, Bristol, TRAPNELL.

1645. T. CROCEIFLORUM Dahlst. (SPECTABILIA.) Cothill, Berks, DRUCE.

1645. T. CYANOLEPIS Dahlst. (VULGATA.) Clouster Brae, Orkney [2903], JOHNSTON.

1645. T. DAHLSTEDTII Lindb. f. (VULGATA.) Adderbury, probably this The Parks, Oxon, DRUCE.

1645. T. DILATATUM Lindb. f. (VULGATA.) Headington, Wolvercote, Oxon; Newtimber, Sussex; Flowerdale, W. Ross, DRUCE.

1645. T. DISSIMILE Dahlst. (VULGATA.) Tenby, Pembroke; belonging to this group, Caenlochan, Forfar, 2500 feet, DRUCE.

1645. T. FAEROENSE Dahlst. (SPECTABILIA.) Naverbank, E. Sutherland, FOX; Sandhurst, Berks and Surrey, DRUCE; Sedburgh, Yorks, TRAPNELL; near Birsay, Orkney, JOHNSTON.

1645. T. FULVIFORME Dahlst. (ERYTHROSPERMA.) Weston-super-Mare, Somerset, DRUCE; Putney, Surrey, FOX; Brighton Downs, Sussex, 1886, Mrs OAKESHOTT; Chesterton, Warwick, 1882, BROMWICH.

1645. T. HAMATUM Raunk. (VULGATA.) Bagley, Berks; Byfleet, Surrey; as a modification from Sunningwell, Berks; Pool Bottom, Oxon; Chepstow, Monmouth, DRUCE.

1645. T. KJELLMANNI Dahlst. (VULGATA.) Adderbury, Oxon, closely allied to this member of the Vulgata, **DRUCE**.

1645. T. LACISTOPHYLLUM Dahlst. (ERYTHROSPERMA.) Headon Warren, Isle of Wight; Coombe Wood, Stow Wood, Oxon; Penally, Pembroke, **DRUCE**; Seaton Carew, **FOX**; Sea wall, Colchester [1942], 1922, **BROWN**; Clifton, W. Gloster, **TRAPNELL**; Acomb, Yorks, **G. WEBSTER**.

1645. T. LAETICOLOR Dahlst. (ERYTHROSPERMA.) Chesterton, Warwick, **BROMWICH**, as *udum*; Seaton Carew, Durham, **FOX**; Adderbury, Oxon; Bamborough, Northumberland, **DRUCE**.

1645. T. LAETIFRONS Dahlst. (VULGATA.) Eday, Orkney [2409], **JOHNSTON**.

1645. T. LONGISQUAMEUM Lindb. f. (VULGATA.) Adderbury, Bletchingdon, Oxon; Byfleet, Surrey, **DRUCE**.

1645. T. MACULIGERUM Lindb. f. (SPECTABILIA.) Askham, Yorks; Kenfig, Swansea, Glamorgan, **DRUCE**.

1645. T. MUCRONATUM Lindb. f. (VULGATA.) Putney Hill, Surrey, **FOX**; Colchester, as forma; Stanton, Studley, Oxon [DD21, 31, 32], as formae, **DRUCE**.

1645. T. NAEVOSUM Dahlst. (SPECTABILIA.) Byfleet, Surrey (a fat form); Chepstow, Monmouth; Burton-on-Trent, Staffs; Barry, Glamorgan, **DRUCE**.

1645. T. NORDSTEDTII Lindb. f. (SPECTABILIA.) High Force, Teesdale, Durham; Cairntoul, 3500 feet, S. Aberdeen, **FOX**; Knyperley, Staffs, **FOX**, as *laevigatum*; Sedbergh, York, **TRAPNELL**.

1645. T. PALUDOSUM Schrank, agg. (PALUSTRIA.) Kinlochewe, W. Ross, **DRUCE**.

1645. T. POLYODON Dahlst. (VULGATA.) Oxford [AA82], as a var., **DRUCE**.

1645. T. PRIVUM Dahlst. (VULGATA.) Gt. Bardfield, Essex, **FOX**, as a forma; Adderbury, Oxon; Teesdale, High Force, Durham; Tenby, Pembroke, **DRUCE**.

1645. T. SUBLACINIOSUM Dahlst. (VULGATA.) Byfleet, Surrey; Bletchingdon [DD34], Stonesfield, Stanton St John, Magdalen College Walks, Oxon; Sunningdale, Berks; Swansea, Glamorgan; Bwylch, Brecon, **DRUCE**.

1645. T. TANYLEPIS Dahlst. (VULGATA.) Bay of Skaill, Orkney [2227], **JOHNSTON**.

*†1650. LACTUCA SALIGNA L. Charlestown, Cornwall, TRESIDDER in *R.I.C.* 1926.

1656. SONCHUS ARVENSIS L., var. ANGUSTIFOLIUS Meyer. Near this. Malvern Cemetery, Worcester, TOWNDROW.

†1661. TRAGOPOGON CROCIFOLIUS L. Splott, Cardiff, SMITH.

1665. LOBELIA URENS L. Hinton Amiral, S. Hants, in some plenty, flowering June-September 1926, DRUCE.

1667. CERVICINA HEDERACEA (L.) Dr. Bank of a moorland burn near Frosterley, Durham, R. B. CORKE; ascends to 1500 feet on Tal-y-Fan, Carnarvon, WILSON.

†1670. CAMPANULA MEDIUM L. Walls of Beauly Abbey, S. Hants, June 1926, DRUCE.

1672. C. LATIFOLIA L. By the Dee, Banchory, Kincardine, DRUCE.

1673. C. TRACHELIUM L., and var. URTICIFOLIA Farringham, Kent, MARRIOTT.

1675. C. ROTUNDIFOLIA L. Mellon Charles, W. Ross, over a very small area, and the first certain record for the vice-county, DRUCE.

†1676. C. PERSICIFOLIA L. Naturalised by the Dee at Banchory, Kincardine, GAMBIER PARRY & DRUCE; Beaverdene, Dumbarton, GRIERSON.

†1677. C. RAPUNCULUS L. Near Petersfield, S. Hants, B. J. BROOKE.

*1687. OXYCOCCUS OXYCOCCUS (L.). Broadhembury, N. Devon, an interesting addition to the Devon flora, June 1926, Col. G. WATTS.

†1691 (3). GAULTHERIA SHALLON Pursh. Naturalised at Flowerdale, Gairloch, W. Ross, DRUCE.

†1691 (4). PERNETTYA MUCRONATA Gaudich. About rocks in Glenveagh, Derryveagh Mts., Donegal, F. R. BROWNING.

1692. ANDROMEDA POLIFOLIA L. Great Whernside, W. Yorks, FOGGITT.

1697. ERICA CILIARIS L. Manaton, Devon, 1911, K. TOMS in *Hb. Exeter*, ex W. D'URBAN.

1703. BRYANTHUS CAERULEUS Dippel. Sow of Athol, Perth, more frequent and over a wider area than in previous years, MILLER.

[1705. LEDUM PALUSTRE L. Formerly on Flanders Moss between Bucklyvie and Cartmore [Gartmore]. See R. GRIERSON in *Journ. Bot.* 61, 1926. He failed to find it there.]

†1712. HYPOPITYS HYPOPITYS (L.). Baldhu Plantation, Cornwall, WM. BOYD in *R.I.C.* 105, 1926.

1718. LIMONIUM RECURVUM C. E. S. Still at Portland, Dorset, 1926, Miss TODD.

1721. STATICE PLANIFOLIA Dr. Rocks above Loch-na-Chat, M. Perth, Miss ALICE COLE.

1726. PRIMULA VERIS. Pollination of. In *Journ. Linn. Soc.*, vol. xlvii., p. 367, Mr E. Marsden-Jones records his observations and experiments on the pollination of the common primrose and shows very clearly that (1) Pollination takes place by day and only very rarely at night; (2) The chief agents of pollination are *Bombus hortorum*, *Bombylus* and *Arthophora*; (3) Very few of the flowers exposed by night develop seed whereas those exposed by day had a large number of fertile capsules.

†1731. CYCLAMEN HEDERIFOLIUM Ait., and var. FICARIFOLIUM Syme. Plantation, Dunmore, Carrigans, Donegal, F. R. BROWNING.

1732. LYSIMACHIA THYRSIFLORA L. Gormire, Thirsk, N. Yorks, flowering freely, FOGGITT.

*1737. L. NEMORUM L. Rozel, Jersey, ARSENE; St Peter's Valley, Jersey, ATTENBOROUGH.

1740. TRIENTALIS EUROPAEA L. Very rare in West Ross, some small plants above Braemore; Strachan, Kincardine, DRUCE.

1743. ANAGALLIS ARVENSIS L., var. VERTICILLATA Diard. Rather a lusus than a variety, Crawley, Sussex, Mrs WEDGWOOD.

1745. CENTUNCULUS MINIMUS L. In plenty between Noirmont and Portelet, Jersey, with *Myosotis sicula* and *Radiola*, ARSENE. Seen there by the Secretary in 1906.

†1747. SYRINGA VULGARIS L. Banchory, Kincardine, DRUCE.

†1751. VINCA MINOR L. Woods of Fallodon, Northumberland, DRUCE.

1758. CENTAURIUM CAPITATUM Dr. Lancresse, Guernsey, Lady DAVY, Miss VIVIAN & FOGGITT.

1763. GENTIANA AMARELLA L. Blore, Staffs, DRUCE & CURTIS.

1763. G. PRAECOX (Rafn). Aldbourne, Wilts, Miss TODD.

1763. G. SEPTENTRIONALIS Dr. Mellon Charles, W. Ross, the prevailing coast-form there, DRUCE.

1765. G. CAMPESTRIS L. With large colonies of the var. ALBA, Greenyard, W. Ross, DRUCE.

†1771. GILIA ACHILLEIFOLIA Benth. Abingdon, Berks, GAMBIER PARRY; Burton-on-Trent, Staffs, DRUCE. Det. A. THELLUNG.

†1777. NEMOPHILA INSIGNIS Benth. Waste ground, Dundee, R. & M. CORSTORPHINE.

†1777. POLEMONIUM CAERULEUM L. Garden-stray, Strachan, Kincardine, DRUCE.

†1781. HELIOTROPIUM CURASSAVICUM L. Mortlake, Surrey, B. REYNOLDS.

†1788. LAPPULA LAPPULA (L.). (*Echinospermum Lappula.*) Beaconsfield, Bucks, Mrs WEDGWOOD; Burnham, Somerset, MILLER; Burton-on-Trent, Staffs, DRUCE & CURTIS; Par, Cornwall, MEDLIN, ex THURSTON.

†1789. BENTHAMIA (AMSINCKIA) PARVIFLORA (Heller). Port Meadow, Oxon, GAMBIER PARRY. Det., as probably this, THELLUNG.

†1789. B. MENZIESII (Lehm.). Abingdon, Berks, GAMBIER PARRY; Trevemper, Cornwall, THURSTON; Goran Haven, Cornwall, *R.I.C.* 106, 1926; Campbeltown, Argyll, Miss M. BROWN. Devizes, GWATKIN.

†1792. SYMPHYTUM PEREGRINUM Ledeb. Aldridge, Staffs, DRUCE.

†1794. S. TAURICUM Willd. Well established in an old lane, Malvern, Worcester, COLIN CHRISTIE, ex TOWNDROW.

†1797. BORAGO ORIENTALIS L. Near Liphook, Hants, Hon. Mrs Ivo FIENNES.

†1810. ASPERUGO PROCUMBENS L. Cherry Hinton, Cambs, BUTCHER & FOGGITT.

1811. PNEUMARIA MARITIMA (L.) Hill. Shore of Loch Linnhe, Argyll, CURTIS; between Girvan and Ballantrae, Ayrshire, FOX.

(The Myosotis have been revised by Mr A. E. Wade.)

1813. MYOSOTIS PALUSTRIS Hill. var. STRIGULOSA Reichb. Bullingdon, Oxon; Spiggie, Zetland, with pale flowers, DRUCE; Tunbridge Wells, Kent, 1851, E. C. TOWNSEND in *Hb. Druce*. Var. CAESPITICIA DC. Reay, W. Sutherland, DRUCE.

*1817. M. SYLVATICA Hoffm. In abundance on the banks of the Exe between Tiverton and Bickleigh, far from houses or gardens, and seemingly quite wild, Col. G. WATTS.

1821. M. VERSICOLOR Sm., var. DUBIA (Arrondeau Cat. Pl. Morb.). Flowers passing direct from white to blue. Chalk downs at High Devon, Freshwater, Isle of Wight, **E. DRABBLE.**

1827. ECHIUM PLANTAGINEUM L. Lustleigh, Devon. Miss **TUCKER.**

†1831. VOLVULUS DAHURICUS (Sims). (C. SEPIUM, var. DAHURICUS Sims). Alien, Siberia, N. America. Par, Cornwall, 1926, **MEDLIN**, ex **THURSTON.**

*1833. CONVOLVULUS ARVENSIS L. Loch Maree, W. Ross, **DRUCE.**

†1848. SOLANUM ROSTRATUM Dunal. Henfield Common, Sussex, Miss **COTTES**; Padenham, Lancs, **C. R. RITCHINGS.**

†1855. DATURA STRAMONIUM L. St Ouen's, Jersey, **ARSENE.**

†1860. VERBASCUM PHLOMOIDES L. This appeared as an outcast on Bethel Lane, Hitchin, Herts, 1926, on a U.D.C. dump. See *Rep. B.E.C.* 1055, 1925, **LITTLE.**

†1864. V. BLATTARIA L. Shrubland Park, Suffolk, Hon. Mrs **E. WOOD.**

1866. V. LYCHNITIS × THAPSUS = V. FOLIOSUM Franchet. Railway bank, St Mary Cray, W. Kent, **C. & N. SANDWITH**; Friars, Anglesey, **MASON.**

*†1873. LINARIA LINARIA (L.) Karst. At Strath, W. Ross, doubtless hortal, **DRUCE.**

†1883. L. MINOR Desf. Burton-on-Trent, Staffs, **DRUCE & CURTIS.**

†1886. L. PALLIDA Ten. Airlie Castle, Forfar, **R. & M. CORSTORPHINE.**

†1889. ANTIRRHINUM MAJUS L. In some plenty on the railway-lines at Burton-on-Trent, Staffs, presumably seedling specimens from ballast, **DRUCE & CURTIS.**

†1890. A. ORONTIUM L., var. GRANDIFLORUM Chav. Splott, Glamorgan, **R. L. SMITH.**

†1891. SCROPHULARIA VERNALIS L. Burrill, N. Yorks, **FOGGITT** & Mrs **MACALISTER HALL.**

1892. S. AQUATICA L., var. PUBESCENS Bréb. Spital, Chesterfield, Derby; Freshwater, Isle of Wight; by the Thames at Kew, Surrey, **E. DRABBLE.**

1894. S. NODOSA L., var. BRACTEATA Dr. Romford, Essex, E. DRABBLE.

1898. MIMULUS GUTTATUS DC. Flowerdale and Strath, W. Ross; Strachan, Kincardine, DRUCE. Var. YOUNGANA Hook. In great quantity and affording a beautiful sight along the burn above the Clatterin' Brig, Kincardine. Noticed there some years ago by R. & M. CORSTORPHINE.

†1899. M. MOSCHATUS Dougl. In a marsh between Flowerdale and the sea, quite naturalised, W. Ross, scentless, DRUCE.

†1906. VERONICA TEUCRIUM L. Established on dunes at Birkdale, Lancs, 1926, BRITTEN.

1912. V. AQUATICA Bernh. Dovedale, Staffs and Derby, DRUCE.

†1923. V. TOURNEFORTII Gmel. Tenby, Pembroke; Gairloch, W. Ross, DRUCE.

†1930. V. CRISTA-GALLI Stev. On a hedge bank at Batheaston, N. Somerset, LESTER-GARLAND.

1933. EUPHRASIA BREVIPILA B. & G. Strachan, Kincardine, DRUCE.

1939. E. MICRANTHA Fr. Strachan, Kincardine, DRUCE.

1960. MELAMPYRUM PRATENSE L. Eilean Maree, W. Ross, DRUCE.

1969. OROBANCHE PICRIDIS F. Sch. Suckley, Worcester, in its second locality, F. DAVY, ex TOWNDROW.

1974. LATHRAEA SQUAMARIA L. On elm at Ro Wen, Carnarvon, Llandudno, Field Club Excursion, ex A. WILSON. Given in *Top. Bot.* on the authority of Robinson, and is another verification of his records of which but few now are unaltered.

(Mr J. Fraser has kindly identified the Mints.)

1988. MENTHA ROTUNDIFOLIA Huds. Barry, Glamorgan, DRUCE, MELVILLE & SMITH; escape, Stromness, Orkney, JOHNSTON.

1989. M. ALOPECUROIDES Hull, not typical. Greenyard, W. Ross, DRUCE.

1990. M. NILIACA Jacq., var. VILLOSA (Huds.). Virginia Water, Surrey, MELVILLE & FRASER: Porthqueen, Cornwall, FOX. Var. NEMOROSA (Willd.). Sowden Bridge, near Trelawne, E. Cornwall, THURSTON; banks of Chew, N. Somerset, WHITE; Eynsford, W. Kent, GROVES.

†1991. M. SPICATA L. Callander, W. Perth; Strachan, Kincardine, DRUCE.

†1993. M. PIPERITA L. Stromness, Orkney, JOHNSTON.

1994. M. AQUATICA L., var. ACUTIFOLIA (Sm.). Aberthin, Glamorgan, Miss VACHELL & DRUCE. Var. ORTMANNIANA Braun. Sowden Bridge, near Trelawne, E. Cornwall, THURSTON. Var. ACUTA Briq. Aberthin, Glamorgan, DRUCE & Miss VACHELL; Cheltenham, DRUCE; Moor End, W. Gloster, Miss ROPER. Var. CAPITATA Briq. St Enodoc Sands, Cornwall; Ayrshire coast, FOX.

1995. M. PUBESCENS Willd. Leigh Brook, Worcester, FOGGITT.

1996. M. VERTICILLATA L., var. OVALIFOLIA Briq. Selkirk, DRUCE & Miss HAYWARD; Dovedale, Staffs. and Derby, plentiful; Whitewell Lydstep, Pembroke, J. ARNOTT; both the British and Welsh specimens had an odour of pure *spicata;* Wynde Park Lake, Hereford, Miss ARMITAGE; Oare, Exmoor, LONG; Ottery St Mary, Devon; Ballantrae, Ayrshire, FOX; Beetly, Norfolk, E. F. LINTON. Var. ADULTERINA Briq. Aberthin, Glamorgan, DRUCE & Miss VACHELL; Longford, Derby (*Rep. B.E.C.*, 1890), W. R. LINTON.

1997. M. GENTILIS L., var. VARIEGATA Sole. Stoneygate, Leicester, BEMROSE. Var. GRATA. Skelwith Bridge, Lancs, FOX.

1997. M. GRACILIS Sole. Stow Bedon, Norfolk, REYNOLDS & FOGGITT.

†1998. M. CARDIACA Baker. Crickley Birdlip, Gloster, HB. DRUCE.

1999. M. RUBRA Huds., var. RARIPILA Briq. Gwennap, Cornwall, 1911, DAVEY; Holworthy, Devon, Rev. H. HARVEY; Compton Abdale, Gloster, RIDDELSDELL; Shirley, Derby, W. R. LINTON; Ellington, Northumberland, FOX.

2000. M. ARVENSIS L., var. AUSTRIACA Jacq. Gairloch, Mellon Charles, W. Ross, DRUCE; Straiton, Ayr, FOX; Bishopstoke, Warsash, S. Hants, RAYNER; Barry, Glamorgan, MELVILLE. Var. DENSIFOLIATA Briq. Hamsworthy, Dorset, E. F. LINTON, as *Nummularia;* Summertown, Oxon, DRUCE; Bruncana, Donegal, FOX. Var. ALLIONII (Bor.). Godstow, Oxon, DRUCE.

2001. M. PULEGIUM L. Aberthin, Glamorgan, Miss VACHELL & DRUCE.

†2002. M. REQUIENII Benth. This Corsican species was found plentifully by streams at about 1000 feet altitude on the northern side of Slieve Gullion, near Newry, J. R. GREEVES in *Ir. Nat.* 141, 1926.

2003. Lycopus europaeus L., var. pubescens Benth. Near Strath, W. Ross, a very dwarf and a rare species in the county, Druce.

*2007. Thymus pulegioides L. Near Malvern, Hereford; Frome, Somerset, V. G. Murray.

†2020. Salvia aethiopis. L. Leckwith Common, Glamorgan, Miss Vachell.

2042. Scutellaria galericulata L., var. littoralis Dr. Loch Ness, Inverness; Kishorn, Gairloch, &c., W. Ross, Druce.

2052. Stachys germanica L. Near Brize Norton, Oxon, 1926, V. E. Murray.

2056. × S. ambigua Sm. St John's Vale, Cumberland, Mason.

2092. Plantago lanceolata L., var. altissima L. Barry, Glamorgan, Melville.

*2103. Herniaria glabra L. Native in gravelly field, Great Salkeld, (not Great Selkirk), Cumberland, H. Britten; near Bexley, Kent, J. Taylor. Spec. non vidi.

*†2105. H. hirsuta L. In plenty on the railway siding and waste ground, Burton-on-Trent, Staffs, Druce & Curtis.

†2110. Amaranthus retroflexus L. Bardney, Lincoln, Goulding.

†2111 (2). A. ascendens Lois. Bristol, C. & N. Sandwith.

†2112. A. albus L. Cardiff, R. L. Smith.

†2113 (2). A. Thunbergii Moq. Abbey Wood, W. Kent, Marriott.

†2114. A. chlorostachys Willd., var. aristulatus Thell. Millbrook, Hants, Miss A. B. Cobbe, teste Thellung; Dagenham, Essex, Melville.

†2116. A. spinosus L., and †A. sylvestris L. Avonmouth, W. Gloster, C. & N. Sandwith.

(All the Chenopods have been identified by Dr Murr.)

2117. Chenopodium rubrum L. St Osyth, Essex, Canon Vaughan, as *urbicum*; East Grinstead, Sussex, R. S. Standen in *Wats. B.E.C.* 1911, as *urbicum*; between Cambwick and Cannington, S. Somerset, 1907 [3208], E. S. Marshall, as *urbicum intermedium*. Var. pseudobotryodes Wats. Sherrard's Green, Worcester, Towndrow; Quarry Moor, Ripon, Yorks, Foggitt.

2122. C. murale L. *Burton-on-Trent and Albridge, Staffs, Druce & Curtis; Marazion, Cornwall, Fox, as *rubrum*. Var. microphyllum Gurke. Bristol, C. & N. Sandwith.

†2123. C. opulifolium Schrad. Burton-on-Trent, Staffs, Druce & Curtis; Brighton, Sussex, Rayner. Var. obtusatum Gaud. Crossness, W. Kent; Burton-on-Trent, Staffs, Druce; Cheston Bank Station, Northumberland, Fox. Var. mucronatum Beck. Burton-on-Trent, Staffs, Druce & Curtis; Barry, Glamorgan, Druce.

2124. C. album L., var. paucidens (Murr). N. Surrey, 1867, H. C. Watson; Burton-on-Trent, Staffs, Druce & Curtis. Var. subficifolium (Murr). Dundee, Forfar, Druce & Corstorphine; Burton-on-Trent, Staffs, Druce & Curtis. Var. viride L. Farnham, Surrey, 1867, H. C. Watson. Var. glomerulosum Reichb. Burton-on-Trent, Staffs, Druce & Curtis; St Helier's, Jersey, Druce. Var. Borbasiforme Murr. Studland, Dorset, Druce. Var. lanceolatum (Muhl.). Colchester [2361], Brown; Abingdon, Berks; Burton-on-Trent, Staffs, Druce. Var. lanceolatiforme (Murr). Colchester; Burton-on-Trent, Staffs, Druce. Var. viridescens St Am., f. serrato-sinuatum Murr. Chobham, Surrey, H. C. Watson; Melmerby, Cumberland, Mason. ×striatum = C. Pseudostriatum Zschacke. Barry, Glamorgan, Druce, Melville, Smith & Miss Vachell. ×opulifolium, var. mucronatum = C. Preismanni Murr. Barry, Glamorgan, Druce, Melville, Smith & Miss Vachell.

†2125. C. leptophyllum Nutt. Burton-on-Trent, Staffs, Druce & Curtis.

†2126. C. ficifolium Sm. Dublin, Fox.

*†2127. C. glaucum L. Abundant at Burton-on-Trent, Staffs, Druce & Curtis; Airdrie Coups, Lanark, Grierson; Thirsk, Yorks, Foggitt.

2129. C. polyspermum L. Towersey, Bucks, Mason.

†2130. C. ambrosioides L. Charleston, Cornwall, Tresidder.

†2136. Beta trigyna W. & K. Erith, W. Kent, Marriott.

†2153 (10). Axyria (not Oxyria) amarantoides L. St Austell, Cornwall, Tresidder in *R.I.C.* 108, 1926.

2160. Salicornia ramosissima Woods. North Berwick, Haddington; *Gairloch, W. Ross; Ray Island, Essex, Druce.

2163. S. appressa Dum. Poole, Dorset, Druce.

2163. S. disarticulata Moss. Whitstable, Kent, Druce; Hayling Island, S. Hants [2510], E. S. Marshall, as *pusilla*.

2167. S. dolichostachya Moss. Hayling Island, S. Hants; *Kenfig, Glamorgan, Druce. ×herbacea. Inverkeithing, Fife, 1848, *Hb. Skene*.

†2168. SALSOLA KALI L., var. TENUIFOLIA Reichb. Woodbridge, Suffolk, AIRY SHAW, teste THELLUNG.

†2183 (4). POLYGONUM PATULUM M.B. Burton-on-Trent, Staffs, DRUCE.

†2183 (5). P. ARENARIUM W. & K. Christchurch, Hants, RAYNER.

†2190. P. PLEBEJUM L. Bristol, N. Somerset, C. & N. SANDWITH.

†2190. P. POLYSTACHYUM Wall. Naturalised on foreshore, Aultbea, and near Poolewe, W. Ross, probably owing its origin to the garden of Mr Hanbury, DRUCE; solitary plant, Madroc Well, Cornwall, *R.I.C.* 108, 1926.

†2191. P. CUSPIDATUM S. & Z. Banchory, Kincardine, DRUCE; Wick Water, Caithness, WEBB.

†2191 (2). P. SACHALINENSE Schmidt. Dumbarton, GRIERSON.

2198. RUMEX CRISPUS L., var. UNICALLOSUS Peterm. Colchester, DRUCE.

2200. R. OBTUSIFOLIUS L., var. AGRESTIS (Fr.). Earith, Hunts, DRUCE.

*†2201. R. SANGUINEUM L. Clandeboye Demesne, Co. Down, C. D. CHASE in *Ir. Nat.* 98, 1926.

2207. R. MARITIMUM L. S. Kipwith, E. Yorks, FOGGITT.

2210. R. ACETOSELLA L., var. MULTIFIDUS DC. Colchester [2222 & 3], BROWN.

†2210. R. DENTATUS Campd. Cardiff, Glamorgan, 1925, DRUCE & SMITH.

†2210 (2). R. OBOVATUS Danser. Newport, Monmouth, MELVILLE; Bristol, C. & N. SANDWITH; Lambridge, Oxon, Mrs WEDGWOOD.

†2210 (3). R. SALICIFOLIUS W. Burton-on-Trent, Staffs, DRUCE & CURTIS.

†2229. EUPHORBIA VIRGATA W. & K. Dagenham, Essex, MELVILLE; near Bix, Oxon, DRUCE; Great Bedwyn, Wilts, HURST.

*2238. E. PEPLIS L. On the shingle near Sandwich, Kent, a solitary specimen, Miss HILDA G. BELTON. Identified by Miss ROBINSON, ex Lady DAVY. Needs refinding to confirm this interesting discovery, which had been previously reported of from between Deal and Sandwich.

2246. ULMUS PLOTII Dr. Weston, Notts, DRUCE; Barrington Bridge, E. Limerick, TRAPNELL.

2246. U. MINOR Mill. (STRICTA Lindl.), var. WHEATLEYI Dr. Balderton, S. Notts, DRUCE.

2250. U. DIOICA L., var. INERMIS. Melmerby, Cumberland, MASON.

*2261. QUERCUS ROBUR × SESSILIFLORA. Streetly Wood, Sutton Park, Warwick, with both parents, H. H. BLOOMER. There is a fine *Quercus Robur* on the banks of the Test in Hampshire. At 5 feet from the ground it has a girth of 33½ feet, A. RUSSELL SMITH.

†2265. CASTANEA CASTANEA (L.) Karst. Flowerdale, W. Ross, DRUCE.

(The Salices have been determined by Mr J. Fraser.)

2268. SALIX FRAGILIS × TRIANDRA = S. ALOPECUROIDES Tausch. By the Avon, Emscote, Warwick, 1870, BROMWICH, as *cuspidata*; New Pool, Malvern, Worcester, 1888, TOWNDROW, as *alba*.

2269. S. ALBA L., var. VITELLINA (L.). *Flowerdale, W. Ross, doubtless planted, DRUCE; Pewsey, Wilts, *Rep. Marlb.*; Killin, M. Perth, FOGGITT. Var. CAERULEA (Sm.). Brandon, Warwick, KIRK; Malvern Link, Worcester, TOWNDROW; Matterston and Kelso, Roxburgh, BROTHERSTON; Aberfeldy, M. Perth, HAGGART & FOGGITT. ×TRIANDRA = S. UNDULATA Ehrh. Putney, Surrey, DE CRESPIGNY, as ? *contorta*. See *Rep. B.E.C.* 232, 1888, when mixed specimens were sent. ×PENTANDRA = S. EHRHARTIANA (Sm.). Brough, Westmorland, FOGGITT. ×FRAGILIS = S. VIRIDIS Fr. Codbeck, Thirsk, Yorks, FOGGITT.

2270. S. TRIANDRA L. Corston, N. Somerset, Miss I. M. ROPER, as *hippophaefolia*. See *Wats. B.E.C.* 1915. Feugh, Kincardine, DRUCE; St Neot's, Beds, 1881, W. R. LINTON, as *alopecuroides*. Var. HOFFMANNIANA (Sm.). Leam-bank, Leamington, Warwick, 1866, BROMWICH, as *amygdalina*. ×VIMINALIS = S. TREVIRANI (Spreng.). Bilbrook, Staffs, FRASER, as *hippophaefolia*.

2271. S. PURPUREA L. See *Rep. B.E.C.* 1063, 1925. Mr T. J. Foggitt sent me the small-leaved form (Smith's type) in 1926 from a canal in Surrey. I have never myself seen it wild. There is a bush on the pond in the Cambridge Botanic Garden. As a gardener's product I know it grafted, as Mr Fraser describes, on a standard, so that the boughs droop, in (1) St Mary's Churchyard, Hitchin; (2) garden, White Hill, Hitchin; (3) garden, Pirton Hall, Hitchin, LITTLE. Strath, W. Ross; Banchory, Kincardine, DRUCE. Var. HELIX (Sm.). Bilbrook, Staffs, 1888, FRASER; Woodloes, Warwick, 1893, BROMWICH. Var. LAMBERTIANA (Sm.). Offord, Hunts, W. R. LINTON; High Force, Teesdale, Durham, FOX (not *genuina*. See *Rep. B.E.C.* 158, 1886). ×VIMINALIS =

S. RUBRA Huds. Strachan, Kincardine, DRUCE. Var. FORBYANA (Sm.). Carham, Northumberland, FOX.

†2272. S. DAPHNOIDES Vill. Tremethick Moor, Penzance, *R.I.C.* 109, 1926; Swinsty Reservoir, W. Yorks, BUTCHER & FOGGITT.

2275. S. CAPREA L., var. SPHACELATA (Sm.). Glen Shee, E. Perth, FOX, as *cinerea*. × VIMINALIS = S. MOLLIS Sm., non Ehrh. Bank of Ashton Brook, N. Somerset, WHITE, as *ferruginea*. See *Rep. B.E.C.* 158, 1886. Killin, M. Perth, FOGGITT. × REPENS. Lurgie Loch, Berwick, 1876, BROTHERSTON.

2276. S. AURITA L. × VIMINALIS. Howl Hill [? Dorstone], Hereford, A. LEY, as *cinerea*, var. *oleifolia*. See *Rep. B.E.C.* 76, 1882.

2277. S. CINEREA L., var. OLEIFOLIA (Sm.). Shirley, Derby, W. R. LINTON. See *Rep. B.E.C.* 311, 1890.

2278. S. REPENS L., var. FUSCA (Sm.). Glen Luibeg, S. Aberdeen; Ross Links, Northumberland, FOX. Var. INCUBACEA (Sm.). Newton St Faith, Norfolk, E. F. LINTON, as *argentea*; Swansea, Glamorgan, W. R. LINTON.

2279. S. ANDERSONIANA Sm. Rievaulx, Yorks, FOGGITT. × PHYLICIFOLIA. Glen Shee, E. Perth, FOX; Yetholm, Roxburgh, BROTHERSTON, as *cotinifolia*; Shrewley Pool, Warwick, BROMWICH, as *rupestris*; Glen Fiagh, Forfar, DRUCE; King's Dale, W. Yorks, Miss ROPER. × AURITA. Rievaulx, Yorks, FOGGITT. × MYRSINITES. Ben Bhrotan, S. Aberdeen, FOX, as *Damascena*; Loch-na-Lairige, M. Perth, FOGGITT. × AURITA × MYRSINITES. Fortingal, M. Perth, FOGGITT. × CAPREA = S. LATIFOLIA Forbes. Kenmore, M. Perth, FOGGITT.

*2280. S. PHYLICIFOLIA L. Gairloch, W. Ross, DRUCE.

2283. S. LAPPONUM L. Still on Helvellyn, Cumberland, at 2800 feet, FOGGITT.

†2291. POPULUS NIGRA L. Near Naburn, Yorks, DRUCE.

†2293. P. SEROTINA Hartig. Near Naburn, Yorks, DRUCE.

†2293. P. TACAMAHACCA Mill. Near Naburn, Yorks, DRUCE. × P. MARYLANDICA Bosc. Putney, Surrey, FOX, as *tremula*.

*2296. CERATOPHYLLUM SUBMERSUM L. Marshfield, Monmouth, WADE.

*2297. C. DEMERSUM L. Hersoe Lake, Glamorgan, Miss VACHELL; Guernsey, Mrs M'CREA.

2305. LISTERA OVATA Br. A slender form at Mellon Charles, W. Ross, DRUCE.

2306. L. CORDATA Br. Strachan, Kincardine, **DRUCE.**

2310. GOODYERA REPENS Br. Alford, N. Aberdeen, W. **WILSON**; Culbin Sands, Elgin, abundant; Strachan, Kincardine, **DRUCE**; Wan Fell, Great Salkeld; Heads Nook, near Carlisle, Cumberland, **BRITTEN.**

2311. EPIPOGON (EPIPOGIUM) EPIPOGON (L.). Near Henley, Oxon, found by its original discoverer in the county last July. The two specimens seen by me *in situ* were very small, and the one I cut had only one flower. One root was taken for the British Museum Herbarium.

[2312. CEPHALANTHERA RUBRA Rich. Recorded from near Selborne, Hants, but in error, the specimen being a *Helleborine*.]

2316. HELLEBORINE LATIFOLIA Dr. A slender form of the aggregate species was sent by Mr J. Nowers, of Darlington, from Baydales, Durham, and Mrs Armitage sent from near Godmersham, Kent, a variegated form which answers to the description of Merrett's plant " nervo medio candido;" Fallodon, Northumberland, **DRUCE** & Viscountess **GREY.**

*2316. H. LEPTOCHILA (Godf.). Maidenhead, Berks, Col. **GODFERY.**

2318. H. PURPURATA Dr. Duncliffe Wood, Shaftesbury, Dorset, V. E. **MURRAY.**

*2320. ORCHIS PURPUREA Huds. The Quenvais, Jersey, **ARSENE.** This corrects my records of *O. militaris*. Last year I only saw leaves and dried up flowers of the plant which some mischievous person had broken off. Brother Arsène's specimen has small flowers, but it is without doubt *purpurea*, not *militaris*. The latter must, therefore, be deleted from the Island flora. Var. ALBA. Near Godmersham, Kent, Mrs **ARMITAGE**, who sent varied forms.

2325. O. PRAETERMISSA Dr. Steep, near Petersfield, Hants, **BROOKS**; Newton Bowland, Yorks, Miss M. L. **PEEL**, ex **PICKARD**; near Aultbea, W. Ross, **DRUCE.** × FUCHSII. Groby, Leicester, **BEMROSE**; parish of Hambledon, Bucks, **DRUCE.** Here it is of recent origin. It grows by the side of a pond which has been formed within the last few years. The seeds of *praetermissa* were doubtless wind-borne to this place and a few plants grew which have been fertilised by pollen from *O. Fuchsii* which grows plentifully on the hillside. A couple of strong plants of this beautiful hybrid resulted. It may be added that in the garden of Mr B. S. Ogle, at Steeple Aston, there flowered this year the grandchildren of the original specimen of *O. praetermissa* which was figured as *incarnata* in the *Report of the Ashmolean Society* in 1904. Its offspring flowered in 1913, and from seed of these, plants again blossomed in 1926. They showed no appreciable variation except in stature from their grandparent so that the stability and distinctness of the species is well established. Probably this is the only instance in which such a test has been made with a native Orchid.

2325. O. PRAETERMISSA Dr., var. PULCHELLA Dr. This northern form—if it is not a distinct sub-species—was plentiful in W. Ross in 1926 at Big Sand and Greenyard; also, as a small form, on the Culbin Sands, Elgin, and at Strachan, Kincardineshire. Also sent from Grantown, Elgin, TAVERNER; Skirwith, Cumberland, BRITTEN; Formby, Lancs, Mr JUSTICE TALBOT; Ballyvaghan, Co. Clare, Lady DAVY & FOGGITT. × MACULATA. Skirwith, Cumberland; Patterdale, Westmorland, BRITTEN.

2326. O. INCARNATA L. Longmoor, Greatham, Hants, BROWNING; white-flowered plants, Chippenham, Cambs, H. FORSTER; Thetford, Norfolk, LITTLE.

2327. O. FUCHSII Dr. St Ola, Orkney, JOHNSTON; Alnwick and Fallodon, Northumberland; *Little Sands, W. Ross, DRUCE.

2327. O. ERICETORUM Linton. In great abundance near Brickyard Wood, Wallington Hall, W. Norfolk, 1926; Flitwick Moor, Beds, 1926 (Saunders does not record the segregate), LITTLE. As I have shown the oldest name is *O. maculata* L., older names than Linton's are *O. candidissima* and *O. praecox* Webster, DRUCE.

2327. O. MACULATA L., vera. Patterdale, Westmorland, with specimens coming under the var. *macroglossa* Dr., BRITTEN; Beauly, S. Hants; Barry, Glamorgan; Ashdown Forest, Surrey; Strachan, Kincardine; Fochabers, Elgin; Huntly, Alford, N. Aberdeen; Mellon Charles, Aultbea, Longa Island, W. Ross; Culbin Sands, Elgin, DRUCE. Var. LEUCANTHA Dr. Drybeck, Westmorland, BRITTEN.

2331. O. HIRCINA Sw. Cuddenham, Suffolk (vice *Herminium*), Hon. Mrs E. WOOD.

*2332. ACERAS ANTHROPOPHORA Br. Totternhoe, Beds, Mrs MARGARET BROWN.

2335. OPHRYS APIFERA Huds. Very luxuriant specimens, sent by Miss COTTES, were gathered by Mr C. W. CHICELE PLOWDEN from Eartham, W. Sussex; an albino form was gathered by Miss TODD near Swanage, Dorset.

2338. HABENARIA GYMNADENIA Dr. Barry, Glamorgan; Strachan, Kincardine; Mellon Charles, W. Ross, DRUCE. Var. DENSIFLORA Dr. Castle Gregory, Kerry, TRAPNELL. × ORCHIS MACULATA. Strachan, Kincardine, clearly this hybrid, DRUCE.

2340. H. VIRIDIS Br. (COELOGLOSSUM). Skirwith, Cumberland, as a pale-coloured form, BRITTEN; Mellon Charles, W. Ross, and the var. BRACTEATA, Mellon Charles, W. Ross; Strachan, Kincardine, DRUCE.

2342. H. VIRESCENS Dr. Strachan, Kincardine; Mellon Charles, W. Ross, **DRUCE**; Skirwith, Cumberland, **BRITTEN**.

2343. H. BIFOLIA Br. Grantown, Elgin, **TAVERNER**; Strachan, Kincardine, **DRUCE**; drove road near Skirwith, Cumberland, **BRITTEN**, here forming a few hybrids, H. BIFOLIA × VIRESCENS. Mr Britten says they were clearly intermediate. Only once have I seen this hybrid, namely, at Sligachan, Skye, where it grew with both parents.

†2363. TRITONIA CROCOSMIFLORA Nicholson. Strath, W. Ross, **DRUCE**.

†2364. NARCISSUS PSEUDO-NARCISSUS L., FLORE PLENO-VIRESCENS. Fairy Hill Wood, Glamorgan, **WEBB**.

2382. RUSCUS ACULEATUS L. On the rampart ditch of Ramsbury Ring, E. Gloster, Rev. J. H. A. **ADAMS**.

*2385. POLYGONATUM MULTIFLORUM All. Wood at Noirmont, Jersey, **ARSENE**.

2388. CONVALLARIA MAJALIS L. Rawthey Bridge, Cumberland, **TRAPNELL**.

†2390. ASPHODELUS FISTULOSUS L. Fowey, Cornwall, **TRESIDDER**; Burton-on-Trent, Staffs, **DRUCE** & **CURTIS**.

†2392. MILLA UNIFLORA R. Graham (TRITELEIA). Pontac, Jersey. See *Rep. B.E.C.* 318, 1921, **ARSENE**.

†2399. ALLIUM ROSEUM L. Beaumont, Jersey, naturalised, **ARSENE**.

†2400. A. NEAPOLITANUM L. Pontac, Jersey, **ARSENE**.

*2403. A. OLERACEUM. New Ross, Wexford, **PHILLIPS** & **STELFOX** in *Ir. Nat.* 78, 1926.

2405. A. SCHOENOPRASUM L. On rocks by river, Erwood, Brecon, **FOGGITT**.

†2406. A. PARADOXUM Don. Stream side, Braid Hills, Edinburgh, **FOGGITT**.

†2407. MUSCARI RACEMOSUM L. Beaumont, Jersey, naturalised, **ARSENE**; near Wilton, Wilts, Hon. Mrs **CAMPBELL**.

†2408. HYACINTHUS COMOSUS L. Par, Cornwall, **MEDLIN** in *R.I.C.* 110, 1926.

†2411. SCILLA HISPANICA Mill. Welbeck, Notts, **GOULDING**.

*2412. ORNITHOGALUM PYRENAICUM L. Near Paignton, Devon, Mrs THEOBALD. An interesting county record.

*2422. COLCHICUM AUTUMNALE L. Near New Ross, Wexford, PHILLIPS & STELFOX in *Ir. Nat.* 78, 1926.

2428. JUNCUS CONGLOMERATUS L. See *Rep. B.E.C.* 455, 1924. Whilst the compact forms of *J. effusus* and *J. conglomeratus* have much general resemblance, one might suggest that the loose form of *J. effusus* does not exhibit the same aspect as that of *J. conglomeratus*. In the latter the flowers are still massed and might, I think, be described as glomerules on stalks of varying length, somewhat resembling those of *Luzula multiflora* (not the var. *congesta*). On the other hand, in the loose form of *J. effusus* the individual flowers stand out much more distinctly in an effuse panicle (Bab.) or cyme (Hooker). I have seen a state of *J. conglomeratus* similar to that described by Mr Mason in the wood behind Parkhurst House, W. Sussex, 1925, LITTLE.

2440. J. GERARDI Lois. Port Henderson, W. Ross, DRUCE.

†2441. J. TENUIS Willd. Precipice Walk, Dolgelly, Merioneth, Lady DOUIE.

†2450. JUNCOIDES NEMOROSUM Morong, var. RUBELLUM (Hoppe) Dr. Pallingsburn, Cornhill-on-Tweed, Northumberland, C. M. STRAWBRIDGE.

2465. SPARGANIUM ANGUSTIFOLIUM Michx. Gairloch, W. Ross, DRUCE.

2466. S. MINIMUM Fr. Gairloch, W. Ross, DRUCE.

2467. ARUM ITALICUM Mill. Lane near Dartmouth, S. Devon, in 1925, but no vestige of it in 1926, R. M. MILNE.

2493. POTAMOGETON GRAMINEUS L., var. PAUCIFOLIUS (Opiz). Loch of Harray, Orkney, JOHNSTON.

2495. P. NITENS Web., var. CURVIFOLIUS Hartm. Loch of Rango, Orkney, JOHNSTON.

2502. P. PERFOLIATUS L., var. ROTUNDIFOLIUS Wallr. Loch of Saintear, Westray, Orkney, JOHNSTON.

2516. RUPPIA ROSTELLATA Koch. Aultbea, W. Ross, DRUCE.

2520. ZOSTERA MARINA L. Off the Isle of Longa, W. Ross, the typical plant, DRUCE.

2527. CYPERUS LONGUS L. Lymington, S. Hants, GAMBIER PARRY.

†2527 (2). C. declinatus Moench. Gravel pit, Hayes, W. Kent, Marriott.

*2529. Eleocharis uniglumis Schultes. Melvich, W. Sutherland, July 1925, Druce.

2533. Scirpus maritimus L. Aultbea, W. Ross, rare, also as the var. monostachys Sonder, Druce.

2535. S. Tabernaemontani Gmel. Ditches within the tidal bank of the R. Ouse, Stow Bridge, W. Norfolk, 1926, Little; Hell Kettles, Durham, J. E. Nowers & J. P. Nicholson.

2539. S. pauciflorus Lightf. Aultbea, W. Ross, Druce.

2545. S. rufus Schrad. Aultbea, W. Ross, Druce. Var. bifolius Wallr. An extraordinary plant coming, W. B. Turrill says, under this, was found by W. D. Miller and Mrs Macalister Hall on shingle at the Mull of Cantyre, Argyll, with the type into which it gradually passed.

2547. Eriophorum paniculatum Dr. Gairloch, W. Ross, Druce.

2556. Mariscus Mariscus (L.) Dr. (*Cladium germanicum*). In a small loch near Gairloch, W. Ross, the second locality known in the vice-county, Druce.

2557. Kobresia bipartita Dalla Torre. At 3000-3500 feet near Meall Garth, M. Perth, Miller.

2558. Carex Pseudo-cyperus L. N.W. side of St Ouen's Pond, Jersey, Arsene.

2563. C. Grahami Boot. From the classic locality in a corrie off Glen Fiagh, Forfar, July 1926, with Foggitt & Corstorphine. It is not quite identical with the Breadalbane plant. Although I have marked it with the hybrid sign in the *List* it may be a good species. In favour of this it may be urged that neither of the putative parents is known from Forfar. It occupies a very small area, and it is possible that seeds may have been conveyed thither by birds from Scandinavia rather than that it is a survival of a once commoner plant.

2564. C. inflata Huds., var. brunnescens (And.) Dr. Greenyard, W. Ross, Druce.

2565. C. lasiocarpa Ehrh. Lochan na Coille, W. Ross, rare in the vice-county, Druce.

*2566. C. hirta L. Near Gairloch, W. Ross, Druce.

2569. C. strigosa Huds. Hackfell, W. Yorks, Lady Davy & Foggitt.

2570. C. HELODES Link. Ashdown Forest, Sussex, DRUCE; near Presteigne, Hereford, Mrs DEBENHAM.

2573. C. DISTANS L. Otter Estuary, Devon, Miss BACON.

2574. C. PUNCTATA Lois. Beaufort, Jersey, in quantity, ARSENE.

2576. C. LEPIDOCARPA Tausch. Tiverton, Devon, Col. G. WATTS; Budleigh Salterton, Devon, Major ORME.

2580. C. DIGITATA L. Hawnby Bank, W. Yorks, FOGGITT.

2581. C. ORNITHOPODA Willd. Hutton Roof, Westmorland, FOGGITT.

2592. C. MAGELLANICA Lam. Mansergh Bog, Westmorland, FOGGITT, Spec. non vidi.

2593. C. LIMOSA L. Amfeur Loch; bog near Kerry Wood, Gairloch, W. Ross, DRUCE.

2602. C. AQUATILIS Wahl. Near Bridge of Dun Station, Forfar, Dr B. P. CAMPBELL.

2608. C. LEPORINA L., var. LONGIBRACTEATA Peterm. Strachan, Kincardine, DRUCE; Malvern Hills, Worcester, TOWNDROW.

2615. C. PAIRAEI F. Schultz. Pendarves, Cornwall, TRESIDDER, ex THURSTON; *Brigflatts, Sedbergh, Yorks, TRAPNELL.

2616. C. DIVULSA Stokes. A very lax form near Edenbridge, Kent, Mr JUSTICE TALBOT.

*2617. C. BOENNINGHAUSIANA Weihe. Edlingham, Northumberland, FOGGITT.

2619. C. DIANDRA Schrank. Pitmoss, Selkirk, BUTCHER, FOGGITT & SLEDGE.

2621. C. ARENARIA L. Isle of Longa, W. Ross, with the var. REMOTA Marss., DRUCE; between Marazion and Penzance, *R.I.C.* 110, 1926.

2623. C. DIVISA Huds. Hayle, Cornwall, Major ORME.

2629. C. DIOICA L. Very robust specimens in a bog near Kerry Wood, Gairloch, W. Ross, DRUCE; *near Budleigh Salterton, S. Devon, Major ORME. Spec. non vidi.

†2634. PANICUM SANGUINALE L. Waterworks Valley, Noirmont, Jersey, ARSENE.

†2637. P. COLONUM L. Glasgow, Lanark, GRIERSON; Avonmouth, Gloster, C. & N. SANDWITH.

†2638. SETARIA ITALICA Beauv. Dagenham, Essex, MELVILLE.

†2640. S. GLAUCA Beauv. Burton-on-Trent, Staffs, DRUCE & CURTIS.

†2641. S. VERTICILLATA Beauv. Avonmouth, Gloster, C. & N. SANDWITH.

[2643. SPARTINA TOWNSENDII H. & J. G. Estuary of the Seine, France, Prof. F. OLIVER. See *Gard. Chron.* i., 213, 1926.]

†2646. BECKMANNIA ERUCIFORMIS Host. Burnham, Somerset. MILLER.

†2653. PHALARIS MINOR Retz. Gweek Quay, Cornwall, Major ORME.

†2654. P. PARADOXA L. Galashiels, Selkirk, DRUCE & Miss HAYWARD; Abingdon, Berks, GAMBIER PARRY; Par, Cornwall, DRUCE.

2667. ALOPECURUS BULBOSUS Gouan. Barry, Glamorgan, MELVILLE.

2673. PHLEUM PRATENSE L. A bracteate form at Strachan, Kincardine, DRUCE.

2684. AGROSTIS ALBA L., var. CONDENSATA Hackel. Isle of Longa, W. Ross, DRUCE.

*†2690. POLYPOGON MONSPELIENSIS Desf. Burton-on-Trent, Staffs, DRUCE & CURTIS; Newark, Notts, Miss BACON.

2693. CALAMAGROSTIS EPIGEIOS Roth. Ashey Marsh, Isle of Wight, Miss TODD.

2697. DEYEUXIA (vel CALAMAGROSTIS) NEGLECTA Kunth. Allied to this are:—

D. BOREALIS (Laestad.). The classic locality is by Loch Tay, M. Perth, where it was discovered by G. C. DRUCE in August 1888, but the plant was destroyed a few years afterwards from the marsh being filled up with saw dust from an adjacent saw-mill. Found in 1917 by J. Fraser by a stream-side near Killin where it still persists; *Scarmclett, Caithness, 1919; *Lough Neagh, Antrim, DRUCE.

D. HOOKERI (Syme) Dr. Lough Neagh, Antrim, (locus classicus); Watton, Norfolk, DRUCE.

It also occurs as the colour form, var. PALLIDA Ruprecht, with slightly longer callus-hairs.

Plants near to *Hookeri* grow with *stricta* at Oakmere, Cheshire, S. H. BICKHAM; also possibly as a new variety, Lt.-Col. WOLLEY-DOD, teste R. W. BUTCHER.

D. SCOTICA Dr. CALAMAGROSTIS STRIGOSA Benn. non Kunth, teste HACKEL. Loch Duran, Caithness, 1885, FOX; do., 1886, F. J. HANBURY; Loch Watten, Caithness, 1887, F. W. WARD; Duran Side, 1903, DRUCE. Well characterised by the more acute glumes. DEYEUXIA, nova species.

Loch Watten, Caithness, 1909, **Druce**. To be hereafter described by R. W. **Butcher**.

2707. Aira praecox L. Ascends to 1940 feet on Tal-y-Fan, Carnarvon, **Wilson**.

†2719. Avena strigosa Schreb. Mellon Charles, W. Ross; Fochabers, Elgin, **Druce**. Var. glabrescens (Marq.). Par, Cornwall, *R.I.C.* 111, 1926.

*2725. Arrhenatherum tuberosum (Gil.) Dr. Strachan, Kincardine; Huntly, N. Aberdeen, **Druce**.

†2727. Capriola (Cynodon) Dactylon O.K. Grève de Lecq, Jersey, **Arsene**.

†2731. Eleusine indica Gaertn. Avonmouth, Gloster, C. & N. **Sandwith**.

2732. Sieglingia decumbens Bernh. Ascends to 1950 feet on Tal-y-Fan, Carnarvon, **Wilson**.

†2737. Cynosurus echinatus L. Tame Valley Bridge, Staffs, **Druce & Curtis**; Robroyston, Lanark, **Grierson**; Rievaulx, N. Yorks, **Foggitt**.

†2744. Koeleria phleoides Pers. Airdrie, Lanark, **Grierson**; Gray, Essex, **Melville**.

†2760. Poa paustris L. Durham, 1883, Fox, as *nemoralis*.

2762. P. nemoralis L. Wall of bridge, Braemore, W. Ross, practically a N.C.R., **Druce**.

2772. Glyceria fluitans Br. Ascends to 1900 feet on Tal-y-Fan, Carnarvon, **Wilson**.

2774. G. distans Wahl., var. miliacea (Rouy). Par, Cornwall, *R.I.C.* 111, 1926.

2776. G. maritima Wahl., var. subcaespitosa Dr. Hoy, &c., Orkney, **Johnston**.

2777. G. Borreri Bab. Climping, W. Sussex, H. H. **Kew**; Ballinacarthy, Waterford, Miss E. **Bond** in *Ir. Nat.* 96, 1926.

(Most of the Fescues have been named by Mr Howarth.)

2782. Festuca elatior × Lolium perenne = F. adscendens Retz. Burnham, Somerset, **Miller**.

2783. F. SYLVATICA Vill. Hackfell, N. Yorks; High Force, Teesdale, FOGGITT.

2785. F. RUBRA L. Swaffham, Cambs, 1833, J. S. HENSLOW, as *duriuscula*. Var. FALLAX (Thuill.). = MUTATA Gaud. Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH; Par, Cornwall. *R.I.C.* 112, 1926. Var. ARENARIA Fr. Ross Links, Northumberland, FOX; Naver Bank, W. Sutherland, DRUCE. Var. GLAUCESCENS (Hack.). Coverack, Cornwall; Seaton Carew, Durham, FOX. Var. BARBATA (Hack.). Wimbledon, Surrey, FOX; Craig Cailleach, M. Perth; Deal, Kent; Sands of Barry, Forfar, DRUCE.

*2786. F. DUMETORUM L. (JUNCIFOLIA St. Am.). Sandy shore, Hartlepool, Durham, FOX.

2787. F. CAPILLATA Lam. Kepier Wood, Durham, FOX. Var. HIRTULA. Glen Fiagh, Forfar, DRUCE.

2787. F. OVINA L., var. HISPIDULA (Hack.). Claremont, Surrey. Var. VIVIPARA. Falls of Foyers, Westerness; Teesdale, Durham, FOX; Flowerdale, W. Ross, DRUCE.

†2789. F. LIGUSTICA Bert. Burton-on-Trent, Staffs, DRUCE; Gweek, Cornwall, Major ORME, as *Bromus*, *R.I.C.* 112, 1926.

†2794. BROMUS RIGENS L. Burton-on-Trent, Staffs, DRUCE & CURTIS; Avonmouth, Gloster, C. & N. SANDWITH.

2797. B. TECTORUM L. In some plenty, Burton-on-Trent, Staffs, DRUCE & CURTIS; Avonmouth, Gloster, C. & N. SANDWITH; Airdrie, Lanark, GRIERSON.

†2799. B. RUBENS L. Burton-on-Trent, Staffs, sparingly, DRUCE & CURTIS.

†2802. B. INERMIS Leysser. On the sands near L'Etac, Jersey, ARSENE; Bristol, N. Somerset, C. & N. SANDWITH.

†2803. B. UNIOLOIDES H.B.K. St Clements and Grouville, Jersey, naturalised, ARSENE.

†2806. B. SECALINUS L. The short spikeletted form, Worth Matravers, Dorset, Miss TODD.

†2809. B. ARVENSIS L. Burton-on-Trent, Staffs, DRUCE & CURTIS.

2819. BRACHYPODIUM PINNATUM Beauv. Hambledon, Bucks, DRUCE; on limestone, Went Bridge, W. Yorks, FOGGITT.

†2820. B. DISTACHYUM Beauv. Par, Cornwall, MEDLIN.

†2821. LOLIUM TEMULENTUM L. Abingdon, Berks, GAMBIER PARRY.

2827. AGROPYRON JUNCEUM Beauv., var. MEGASTACHYUM (Fr.) Dr. Par, Cornwall, MEDLIN, ex THURSTON. × REPENS = A. HACKELII Dr. Greenyard, W. Ross, in absence of *junceum*, which may have previously existed there, DRUCE; Par Sands, Cornwall, MEDLIN.

2828. A. PUNGENS R. & S. Type at Stone Point, Walton-on-Naze, N. Essex [2376], BROWN, and [2375 & 2376] smaller forms, from Langueboe in the same vice-county, BROWN. × REPENS = A. OLIVERII Dr. Silloth, Cumberland, DRUCE. To this probably belong plants from Strood Peldon, N. Essex [2373], BROWN, which are nearer *repens*.

†2836. TRITICUM OVATUM Rasp. Hythe Quay, Colchester [2370], BROWN, teste Prof. PERCIVAL.

†2839. T. VENTRICOSUM Ces. Hythe Quay, Colchester [2350], BROWN, teste Prof. PERCIVAL.

†2850. HORDEUM MARINUM Huds. Burton-on-Trent, Staffs, DRUCE & CURTIS.

†2851. H. JUBATUM L. Beaconsfield, Bucks, Mrs WEDGWOOD.

†2865 (2). CEDRUS LIBANI Barr. Lord Ullswater in a letter to "The Times" of April 1, 1926, says the Cedars on his lawn at Campsea Ashe, Suffolk, measure respectively, at 5 ft. from the ground, 21 ft., 20 ft., 19 ft., 18 ft. 5 in., and 17 ft. Mr Bean says they were the finest he had seen in England. The Blenheim Cedars measured by the Duke of Marlborough in 1926 were 28 ft., 24½ ft. and 21¼ ft. in girth.

2868. EQUISETUM SYLVATICUM L., var. CAPILLARE Milde. Dykehead, Cortachy, Forfar, Lady DAVY & FOGGITT.

*2874. E. VARIEGATUM Weber. Borth, Cardigan, D. POWELL in *Journ Bot.* 222, 1926.

2876. EUPTERIS AQUILINA Newm., var. MULTIFIDA. Burnley, Lancs, C. R. RITCHINGS, ex BRITTEN.

2880. ASPLENIUM MARINUM L., var. PLUMOSUM. This very rare variety, which had not been seen for half a century, was found by Major ORME at Budleigh Salterton, S. Devon.

2887. A. GERMANICUM Weiss. Near Keswick, Cumberland, in a new locality, Miss BACON & FOGGITT.

2900. DRYOPTERIS AEMULA Kuntze. Underwood, Port Henderson, W. Ross, DRUCE.

*2909. PHEGOPTERIS DRYOPTERIS Fée. Stanford Wood, near Bradfield, Berks, DRUCE.

2918. OSMUNDA REGALIS L. Not rare in the north of Jersey; by a rivulet on the Quenvais, ARSENE.

2922. PILULARIA GLOBULIFERA L. Dyke, Eastfield, Hickling, E. Norfolk, C. & N. SANDWITH; *N.W. Denbigh, DALLMAN & WILSON in *N.W. Nat.* 215, 1926.

2929. LYCOPODIUM CLAVATUM L. Plentiful a few feet above sea level on the Culbin Sands, Elgin, DRUCE.

*2933. NITELLA FLEXILIS Ag. Plentiful in Llyn Mynydd-y-geer, Glamorgan, Miss VACHELL.

2934. N. OPACA Ag. Cannock Chase, Staffs; Gairloch, W. Ross, DRUCE.

2951. CHARA HISPIDA L. Hell Kettles, Durham, J. E. NOWERS & J. B. NICHOLSON.

2955. C. ASPERA Willd. Ballyvaughan, Co. Clare, O'KELLY; Cannock Chase, Staffs, DRUCE.

*2955 (2). C. MUCOSA G. & B.-W. Loch of Rango, Sandwick, Orkney, JOHNSTON, with *contraria*, *aspera*, and *desmacantha*. A most interesting addition to Britain.

LE LAUTARET.

By G. Claridge Druce.

One of the most fascinating places in Europe is the Col du Lautaret, both for its scenery and for its very rich botany.

It is now within easy reach of Britain, and is cordially recommended to any one who is anxious to begin the study of the Alpine flora in pure and bracing air amid the high alps. It is situated in the Dauphiny, itself a most fascinating area. An easy day's railway journey from Paris landed us as Grenoble, a delightfully situated and strongly fortified city on the rivers Isère and Drac, once the capital of Dauphiny, now of the Department of Isère. The journey was a pleasant one from Paris to Lyon, but there our carriage was invaded by a crowd of garlic-smelling peasants with, if any, only third class tickets. Their intrusion, however, did not prevent the enjoyment of the fine scenery we passed through ere we reached Grenoble in time for dinner. The environs of the town are pleasing, the rushing Isère bringing a current of cool, fresh air in its wake. The banks of the stream were bordered with many interesting species, among which *Bromus tectorum*, *Lepidium Draba* and *Chenopodium murale* were frequent.

Our first expedition was to visit the Grand Charteuse—

> " Per invias rupes, fera per juga,
> Clivesque praeruptus, sonantes
> Inter aquas, nemorumque noctem,"

and to follow Matthew Arnold's steps

> " Where thick the Crocus blows
> The mule-track from St Laurent goes."

Albeit the Crocus may have been the Colchicum. The journey is through wooded glens, by rocky escarpments and bosky dells where *Prenanthes purpurea*, *Impatiens Noli-tangere*, *Sambucus racemosus*, *Salvia pratensis*, *Calamagrostis montana*, *Senecio Fuchsii*, *Lunaria rediviva*, *Bupleurum falcatum*, *Inula Vaillantii*, *Euphorbia dulcis*, *Gentiana lutea*, *Campanula patula*, *C. Trachelium* and *Coronilla varia* were noted. The gorge near St Laurent is singularly fine and is alone worth a visit, the Guier stream rushing and foaming below, while the overhanging precipices give a chance for many a rare plant to survive. We did not feel tempted to go through the Monastery, which is situated at an elevation higher than that of Ben MacDhui, but preferred the wilder surroundings. Returning to Grenoble, we had a fine view of the Grand-Som, 6670 feet. Its slopes appeared to be very precipitous. On one of the lower foothills we obtained beautiful specimens of *Ononis fruticosa*, *O. Natrix* and *Euphorbia verrucosa*. The journey, under sixty miles, by automobile to Le Lautaret is pleasant. It follows the river Romanche, passing through Vizille, Le Bourg-d'Oisans, Le Dauphin and La Grave.

Lavender grows plentifully locally, and bunches of it are offered by the children for sale. There is very grand scenery in the Combe de Malaval, the south side showing the largest glacier in the Dauphiny. La Grave itself is splendidly situated, and here our vigilant members, the Misses Cobbe, stayed for some time in the earlier summer and made a large gathering of plants, including *Aconitum Lycoctonum*, *Arabis Turrita*, *A. brassicaefolia*, *Tunica prolifera*, *Ononis rotundifolia*, *Astragalus purpureus*, *Colutea arborescens*, *Vicia tenuifolia*, *V. varia*, *Lathyrus niger*, *Coronilla Emerus*, *Prunus Mahaleb*, *Spiraea Aruncus*, *Potentilla rupestris*, *Alchemilla glaberrima*, *Amelanchier vulgaris*, *Epilobium rosmarinifolium*, *Pimpinella Tragium*, *Lonicera Xylosteum*, *L. caerulea*, *L. alpigena*, *Achillea macrophylla*, *Carduus personatus*, *Sonchus alpinus*, *Hieracium florentinum*, *H. staticaefolium*, *Phyteuma Halleri*, *Campanula persicifolia*, *Legousia Speculum*, *Pinguicula vulgaris*, var. *micrantha*, *Vincetoxicum officinale*, *Myosotis sylvatica*, *Verbascum Lychnitis*, *Digitalis ambigua*, *D. lutea*, *Veronica prostrata*, *V. urticifolia*, *Pedicularis gyroflexa*, *Melampyrum nemorosum*, *M. sylvaticum*, *Orobanche purpurea*, *O. Epithymum*, *Prunella alba*, *Ajuga genevensis*, *Plantago Cynops*, *Globularia vulgaris*, *Chenopodium hybridum*, *Daphne alpina*, *Euphorbia Esula*, *Lilium croceum*, *Hyacinthus comosus*, *Allium Scorodoprasum*, *Paris*, *Unifolium Bifolium*, *Polygonatum verticillatum*, *P. Polygonatum*, *Orchis militaris*, *Cephalanthera pallens*, *Stipa pennata*, *Polystichum Lonchitis*, *Cystopteris alpina* and *Asplenium fontanum*. Above La Grave, on extremely precipitous places, copper mines are worked. The scenery is superb as one ascends the pass of the Lautaret which separates the stream of the Romanche from that of the Guisane. The top is 6869 feet above sea level. Although in August, owing to the cold and mist in the early summer, the beautiful pastures were still uncut and were a Persian carpet in colouring, despite many of the plants being over flower. Conspicuous amongst the flowers, as we revelled in our first ramble, were *Swertia perennis* in magnificent bloom with both purple and white flowerets, *Centaurea montana*, its brilliant blue contrasting with the yellow of *Hypochoeris maculata* (a form, too, with unspotted leaves), *Crepis blattaroides*, *C. aurea*, *Hieracium valdepilosum*, *H. villosum*, *Buphthalmum salicifolium* and *grandiflorum*, *Aconitum Anthora*, *Crepis grandiflora* and *Potentilla delphinensis*. We also gathered *Scabiosa sylvatica*, *Astragalus penduliniformis*, *alpinus* and *aristatus*, *Centaurea uniflora*, *Rumex arifolius*, *Ranunculus aconitifolius*, *Campanula thyrsoides*, *barbata* and *rhomboidalis*, *Onobrychis montana*, *Saxifraga Aizoon*, *Biscutella laevigata*, *Gentiana punctata*, *Veratrum album*, *Solidago monticola*, *Pedicularis tuberosa*, *Phyteuma betonicifolia*, *P. Michelii* and *Papaver alpina*. In many wet places grew *Phleum alpinum*, *Poa alpina*, *Juncus filiformis*, *J. alpinus*, *J. castaneus*, *J. arcticus*, *J. trifidus*, *Epilobium alpinum*, *E. alsinifolium*, *Eriophorum latifolium*, *Veronica alpina*, *Allium Schoenoprasum* and *Juncoides spadicea*. At Le Lautaret each point of the compass affords magnificent views. Westwards is the grand massif of La Meije (13,080 feet), and the

Pic de Combeynot, and southwards is the road leading to Briançon. Eastwards lies the road crossing the Col du Galibier (6790 feet), dominated by the Grand-Galibier (10,637 feet), the precipices of which are so steep that no snow can lie on them, and north-westwards one looks down the road to La Grave above which rises on the left the massif of Mont Pelvoux (12,970 feet). Good botanising lies close to the hotel. Conspicuous are *Trifolium Thalii* (like a strongly caespitose and slender *repens*), *Veronica Allionii* of a glorious blue, *Dianthus neglectus* of a glorious dark pink, *Asperugo procumbens*, *Euphrasia minima*, *Polygonum viviparum*, *Galium erectum*, *Pimpinella magna*, var. *rosea*, *Dryas*, *Geum montanum*, *Astrantia major*, *A. minor*, *Erigeron intermedium*, *Hieracium Laggeri*, *Aster alpinus*, *Rhododendron ferrugineum*, *Sempervivum arachnoideum*, *Oxytropis campestris*, *Calamagrostis montana*, *Poa violacea*, *Festuca pulchella*, *Trisetum distichophyllum*, *Agrostis rupestris*, and *Vesicaria utriculata*. The road leading to Briancon, whence we had a view of the distant Monte Viso, had many treasures, and the banks of the Guisane and the adjacent slopes offered much of interest. In one place we got very locally *Polygala alpina* Perr.-Song., the very rare hybrid, if, indeed, it is not a separate species, and there were *Plantago serpentina*, *Adenostyles leucophylla*, *A. alpina*, *A. albifrons*, *Valeriana montana*, *Rosa pendulina*, *Carex foetida*, *C. Davalliana*, *Kobresia spicata*, *Carex claviformis* (apparently new to the Dauphiny), *Nepeta Nepetella*, *Scutellaria alpina*, *Bartsia lanceolata*, *Cotoneaster*, *Lactuca perennis*, *Brassica Richerii*, *Arabis alpestris*, *Campanula pusilla*, *Linaria repens*, *Satureia alpina*, *Ajuga pyramidalis*, *Rumex scutatus*, *Salix retusa*, *Daphne Mezereum*, *Polygala alpina*, *P. Amarella*, *Saponaria Ocymoides*, *Trifolium spadiceum*, *T. montanum*, *T. alpestre*, *Dianthus sylvestris*, *Catananche caerulea* and *Nigritella*. The Col du Galibier, about 2000 feet above Le Lautaret, afforded a rich harvest, the grassy slopes still having in flower sheets of *Viola calcarata* and three species of *Gentiana—nivalis*, *verna* and *bavarica*. There, too, were *Cardamine resedifolia*, *Draba aizoides*, *Arabis alpina*, and var. *crispata*, *Androsace septentrionalis*, *Ranunculus glacialis*, *Gentiana islandica*, *Thlaspi rotundifolium*, *Valeriana tripteris*, *Erigeron alpinus*, *E. uniflorus*, *Senecio incanus*, *Silene acaulis*, *Hutchinsia alpina*, *Anemone alpina*, *Myosotis alpestris*, *Draba carinthiaca* and *Trifolium alpinum*. The Misses Cobbe made a prolonged stay from June to August at Le Lautaret, and their list, in addition to many of the foregoing, includes *Ranunculus pyrenaeus*, *R. montanus*, *Anemone narcissiflora*, *A. vernalis*, *A. baldensis* (Galibier), *Trollius*, *Aquilegia alpina*, *Erysimum hieracifolium*, *E. pumilum*, *Sisymbrium pinnatifidum*, *S. tanacetifolium*, *S. austriacum*, *Arabis bellidifolia*, *Alyssum Alyssoides*, *Draba incana*, *Isatis tinctoria*, *Thlaspi perfoliatum*, *Viola biflora*, *Silene Otites*, *S. rupestris*, *S. nutans*, *S. Vallesia*, *Gypsophila repens*, *Dianthus Saxifraga*, *D. Carthusianorum*, *Arenaria Sedoides*, *A. verna*, *Cerastium arvense*, *Linum alpinum*, *Geranium sanguineum*, *G. rivulare*, *Hypericum Richeri*, *Ononis cenisia*, *Astragalus monspessulanus*, *A. Cicer*, *A. Hypo-*

glottis, *Oxytropis lapponica*, *Phaca astragalina*, *Lathyrus luteus*, *L sylvestris*, *Rubus saxatilis*, *Potentilla aurea*, *Sanguisorba officinalis*, *Alchemilla Hoppeana*, *Epilobium collinum*, *Sedum Anacampseros*, *S. alpestre*, *Sempervivum arvenense*, *Saxifraga rotundifolia*, *Laserpitium Panax*, *L. Siler*, *L. latifolium*, *Meum Athamanticum*, *Peucedanum Ostruthium*, *Bupleurum rotundifolium*, *Carum Carvi*, *Homogyne alpina*, *Bellidastrum Michelii*, *Doronicum cordatum*, *Aronicum scorpioides*, *Senecio Doronicum*, *Gnaphalium norvegicum*, *Antennaria dioica*, *Leontopodium alpinum*, *Artemisia atrata*, *Achillea nana*, *Cirsium spinosissimum*, *C. heterophyllum*, *Carduus nigrescens*, *Crepis paludosa*, *Phyteuma hemisphericum*, *Campanula spicata*, *Pyrola rotundifolia*, *Vaccinium Vitis-idaea*, *V. uliginosum*, *Arctostaphylos Uva-ursi*, *Primula farinosa*, *P. latifolia*, *Pinguicula alpina*, *Androsace obtusifolia*, *Soldanella alpina*, *Gentiana tenella*, *Cerinthe minor*, *Lappula Lappula*, *Scrophularia Hoppii*, *Linaria alpina*, *Veronica aphylla*, *V. spicata*, *Pedicularis comosa*, *P. incarnata*, *Stachys recta*, *Dracocephalum Ruyschianum*, *Plantago alpina*, *P. montana*, *Statice alpina*, *Globularia cordifolia*, *Oxyria*, *Rumex alpinus*, *Polygonum Bistorta*, *Daphne striata*, *Thesium alpinum*, *T. intermedium*, *Euphorbia Cyparissias*, *Salix reticulata*, *S. herbacea*, *Tofieldia palustris*, *Lilium Martagon*, *Lloydia*, *Gagea Liottardi*, *Ornithogalum umbellatum*, *Allium Victorialis*, *Paradisia Liliastrum*, *Anthericum Liliago*, *Asphodelus subalpinus*, *Crocus vernus*, *Narcissus poeticus*, *Habenaria viridis*, *H. albida*, *Orchis ustulata*, *O. sambucina*, *O. globosa*, *Luzula lutea*, *L. nivea*, *L. sudetica*, *Schoenus ferrugineus*, *Eriophorum gracile*, *Scirpus compressus*, *Carex curvula* (Galibier), *C. ericetorum*, *C. ornithopoda*, *C. capillaris*, *C. ferruginea*, *C. frigida*, *Sesleria caerulea* and *Melica nutans*. From the Col du Galibier we had a most delightful drive down to St. Jean de Maurienne through woods where *Epipogon* grows plentifully, and thence a most attractive journey to Chamounix led us to that superb northern view of Mont Blanc. On the way we saw many familiar flowers. Nearing Geneva, the road sides were bordered with fruit trees of which the pears were in most abundant fruit. At Geneva we saw the veteran M. Buser, the well-known authority on *Alchemilla*, but he is now nearly deaf and blind, so he is unable to find the specimens I sent him thirty years ago. which are lost in his herbarium. He remembered that they included the first British example of *Alchemilla pubescens*, but he had forgotten the locality. Despite his affliction, he was happy in his surroundings. He seemed to think it remarkable that *A. argentea* Don (*conjuncta*) was a native of Britain. We also called on Dr Beauverd to convey thanks for my election as Corresponding Member of the Botanical Society of Geneva. He showed us the great herbarium of Boissier. The University also possesses the plants of Bouvier, the author of the " Flore des Alpes." On the flat roof, covered with shingle, several hybrids of *Sempervivum* were quite at home, and there were naturalised specimens of an Algerian blue-winged grasshopper quite happy on a soil very similar as regards temperature to that of their African abode.

The first part of the railway journey from Geneva to Paris is by the rushing Rhone, and the scenery is quite interesting. From Paris we flew to Croydon, and thus ended a most enjoyable journey. The memories of Le Lautaret will long be treasured and not without hope of a more prolonged and closer investigation of a flora of such peculiar interest. Verlot's Catalogue Raisonné des Plantes Vasculaires du Dauphine, published by Prudholme, Grenoble, is a comprehensive work, but it lacks descriptions of the species.

CENTAUREA PRATENSIS THUILLIER.

By C. E. BRITTON.

In previous papers (*Rep. B.E.C.* 163, 1920; 406, 1921; 767, 1922) on *Centaurea*, this species was purposely omitted as it was desired to deal with it apart from its allies, *C. Jacea* and *C. nigra*. It is not a difficult species to identify but there are in existence somewhat similar forms liable to be mistaken for it. It is proposed to print the original description, supplemented by modern accounts by botanists who have made an especial study of the genus, and then to indicate the extent of its present known occurrence in Britain.

I. AUTHORS' VIEWS OF THIS SPECIES.

CENTAUREA PRATENSIS Thuillier.

" C. calycibus ciliatis erectis et pappo nigricante terminatis, foliis lanceolatis dentato-lyratis. Vaill. Par. 107.

Habitat in pratis. Flores idem; Julio, Augusto. Centauree des prés. Paroît n'être qu'une variété de la précédente [*C. nigra*]. Feuilles lancéolées et garnies de dents anguleuses et distantes. Cette plante varie par le plus ou le moins de longeur et de largeur de ses feuilles, par leur couleur, par leur circonférence qui est tantôt entière et tantôt decoupée. La couleur des écailles est aussi différente. Il y a dents pieds où elles sont terminées par des plumes noires, d'autres par des brunes ou des rousses; et d'autres enfin où les écailles sont dénuées des plumes. Fleurs rouges; en Juillet et Août. Se trouve dans les prés." Thuillier *Fl. de Paris* 444 (1799). Described in such ambiguous terms the species attracted little attention, and it was left to Boreau to bring it into more prominent notice. His description is as follows:—" *Centaurea pratensis* Thuill. Stem from 1 to 5 decim., angular, branched; leaves rough, lanceolate, broad and almost entire in damp places, narrow and cut up in drier localities; peduncles strongly angular, inflated at the summit; capituli large, cylindrical-globular; phyllary appendages blackish-brown, deeply pectinate or fimbriate, imbricate; fruit not papose, but furnished with hairs that exceed the disk and resemble a pappus; florets red, the outer rayed, very rarely all equal. Flowers May to August. Perennial. Rather rare in the centre of France where *C. Jacea* is plentiful, but very common in the west." Boreau, *Fl. du Centre de la France*, ed. 3, p. 354.

The lack of precision of the original description, compared with Boreau's account, has led some botanists to adopt the formula, *C. pratensis* Thuill., *saltem* Boreau. Briquet, in his *Monog. Cent. Alp. Maritim.* (1902), placed this plant under *C. Jacea* as a variety, in that section characterised by the appendages of the lower half, or more, of the capitulum being pectinate. His full description is "Plant 10-80 centim. Stem stout, erect or ascending, rarely decumbent, furrowed, glabrous or more or less hispid but not tomentose, branched above the middle, branches stout, erect or ascending. Leaves green, always rough, the lower long-petioled, lamina oblong-lanceolate, margin entire or sinuate-dentate, rarely pinnatifid, the upper oblong-lanceolate, oblong, or lanceolate, entire, with one or two lobes at base, reduced to teeth in the smaller leaves, sessile. Capituli solitary or sometimes two at the apices of the branches. Pericline ovoid-globular, medium, appendages usually almost entirely covering the phyllaries; appendages ovate-lanceolate, all pectinate-ciliate, or at least pectinate-ciliate in the lower three-fourths or half of the pericline, with teeth scarcely exceeding the breadth of the disk, the upper scarious appendages only incised like those of var. *vulgaris*. Outer florets usually rayed and sterile. Fruits epappose, but sometimes with a rudimentary pappus present on the fruits from the centre of head. Flowers June and July, lingering on into the autumn in elevated localities."

Briquet adds that var. *pratensis* occupies an intermediate position between var. *vulgaris* (which has orbicular, concave, irregularly incised appendages) and var. *nigra* [*C. nigra*] differing essentially from the first, of which it has the habit and fruit, by the appendages being almost all pectinate-ciliate. *Nigra* has heads always larger and more spherical, with teeth blackish, shortly plumose, much longer than the disk, and fruits with a pappus almost about one-sixth its length. All these characters are easy to verify on typical forms of *C. nigra*, but, he adds, it is quite certain that there exist intermediate forms between var. *pratensis* and *nigra*, in which the characters previously given are not easy to verify. As regards the length and colour of the teeth of the appendages numerous intermediates connect *pratensis* and *nigra*.

The description given by Rouy (*Fl. Fr.* ix., 124) shows various points of disagreement with the accounts of Boreau and Briquet, and will not be quoted here. For comparison, the most recent view of *C. pratensis*, that of Hayek in "Kritische Studien über den Formenkreis der *Centaurea Jacea* L.," in *Verh. K.K. Zool. Bot. Gesellsch.* 1917/8, will be given. It should be noted that in the paper in question, the following species are recognised:—(1) *Jacea*, including nine sub-species; (2) *dubia*, with four sub-species; (3) *pratensis*, with one forma, and, (4) *nigra*, with sub-species *eunigra*, *aterrima*, and *nemoralis*.

C. pratensis Thuill. is thus described:—"Stem erect, about 80 centim., angled, branches not conspicuously elongated. Leaves green, slightly hairy, ovate-lanceolate to lanceolate, the lower with distant cartilaginous teeth, lamina of the basal and lower leaves entire or sinuate-pinnatifid, narrowed into the petiole, the upper leaves sessile, base narrow or rounded. Capituli solitary; pericline ovoid-orbicular or orbicular, 14-16 mm. in dia.; appendages roundish, only shortly acuminate, imbricate, the lower and median regularly pectinate, teeth 10-14 on each side, about 2 mm. long, blackish or less commonly brown, equalling or exceeding the dark-brown or blackish ovate-lanceolate disks, succeeding appendages with teeth more or less united, the uppermost appendages roundish, entire or incised. Florets crimson-purple, marginal neuter, enlarged, radiate. Fruit 3 mm. long, grey, finely pubescent. Pappus seldom absent, usually consisting of a few short bristles. France. Piedmont. Switzerland. Western Germany, especially in the distribution area of *C. nigra*, into which it passes, as in the Alpes Maritimes." The writer adds that he would like to call especial attention to its as being in appearance a true, constant intermediate between *Centaurea Jacea* and *C. nigra*. The point of view, however, that would consider *C. pratensis* to be a hybrid between these two species is not approved. Hayek says that the evidence is against the assumption that all forms placed here are of hybrid origin, and, quotes with approval the view of Wirtgen, that it is exactly intermediate between *C. Jacea* and *C. nigra* and, although it is not to be taken for a hybrid of these species, forms of it approach close to *C. Jacea* and other forms are near to *C. nigra*. That it may be a descendant of a hybrid between the species named is admitted as a not unreasonable view.

II. ITS DISTRIBUTION IN BRITAIN.

The earliest date known to me when the name *C. pratensis* Thuill. was first applied to a native plant was in the year 1870 when, on the 10th November, at a meeting of the Botanical Society of Edinburgh, Mr J. Sadler exhibited specimens identified by him as *C. pratensis*, which he had found growing near Forgandenny in Perthshire. A specimen of this gathering is in the Herb. Brit. Mus., and it appears to be correctly named.

The late F. Townsend in *Fl. Hampsh.* 211, 1904, wrote—" A rayed form which I take to be *C. pratensis* Bor., occurs in all the sub-districts of district iv." This conclusion is somewhat qualified by the author's previous remarks that he was unable, with any degree of satisfaction, to differentiate the Hampshire forms of *C. nigra* in accordance with those described by the French botanists. I have not discovered that Townsend distributed this " pratensis," and have failed to find in his herbarium any form at all like *C. pratensis*, and cannot apply the name to other plants seen from the county.

Plants that agree in all essential points with *C. pratensis* Thuill., as described by the authors whose accounts have been quoted, occur in Britain. They are usually robust plants, well-branched, with the branches for the most part simple, the capituli orbicular, orbicular-ovoid or ovoid, with appendages closely imbricate, never black, but dark to lighter brown, deeply pectinate in the lower two-thirds or three-fourths of the pericline, with disks lanceolate, elliptical, or ovate, with teeth 2-3 mm. long. The upper series of appendages are coarsely fimbriate or incised. The heads are usually very showy with widely-spreading marginal radiate florets.

Although, as stated, this species does not present any difficulty in its recognition, yet the acknowledged existence of intermediate forms connecting it on one side with *C. Jacea* and, on the other, with *C. nigra*, may cause observers to mistake for *C. pratensis* some of these transition forms. If we may safely place these to one or other of its allies, then the position of the species is better defined. Where this species occurs in this country it is often accompanied by forms showing phyllary-appendages lacerate or fimbriate rather than pectinate, which would seem better placed as fringed varieties of sub-species of *C. Jacea*. The connecting forms with *C. nigra* (or, rather *C. nemoralis*) occur chiefly, but not exclusively, in localities where *C. pratensis* is absent. The plants alluded to are some of those showy radiate forms from our chalk downs and limestone hills in the south and west of England which do not seem sufficiently distinct from *C. nemoralis* or *C. Drucei*.

C. pratensis, as described by the authors quoted and, also, it may be pointed out, in full agreement with the figure of this species given in the *Flore Descrip. et Illust. de la France*, of Coste, ii., 391, has been found in the following vice-counties:—

V.-c. 14, Sussex E.—Seaford, 1913, 1914, Miss Bray in Herb. C. E. Salmon; Wilmington, T. Hilton in Herb. Brighton Mus.

V.-c. 16, Kent W.—Crossness, A. H. Wolley-Dod; Upper Halling, A. H. Wolley-Dod (see *Fl. Kent*); Shorne Marshes, W. R. Sherrin.

V.-c. 17, Surrey—Claygate, 1875, H. C. Watson in Herb. Kew (as *C. nigra*, var. *radiata*), among clover [introduced?]; Leatherhead (non-radiate), C. E. B.; Woldingham, C. E. B. (see *Rep. B.E.C.* 825, 1919.

[V.-c. 22, Berks.—Wellington College, C. E. B. Introduced.]

V.-c. 24, Bucks.—Knaphill [Naphill], 1896, G. C. Druce.

V.-c. 34, Gloucester W.—St Vincent's Rocks, 1846, G. H. K. Thwaites in Herb. Kew (as *C. nigra*, v. *nigrescens*).

V.-c. 58, Chester—Bollington, E. S. Marshall, 1895 (as *C. nigra*, var. *pallens* Koch).

V.-c. 88 or 89, Perth—Forgandenny, 1870, J. Sadler in Herb. Brit. Mus.

Channel Islands—Guernsey, W. C. Barton.

A variation with rayless capituli (f. *eradiata* Hayek) occurs in Surrey, where are also to be met with plants scarcely distinguishable from Portuguese specimens of *C. rivularis* Brot. which is very closely related to *C. pratensis* if, indeed, specifically distinct.

THE EVOLUTION AND CLASSIFICATION OF FLOWERING PLANTS.

By JOHN PARKIN.

Not until after the publication in 1859 of Darwin's convincing work, *The Origin of Species*, could the classification of plants and animals be said to have reached the status of a science. The vague idea of affinity prevailing under the retarding influence of the dogma of the constancy of species was seen in the acceptance of the evolutionary origin of living forms to be none other than that of blood-relationship. The aim or ultimate goal of classification then became clear, namely, the arrangement of plants and animals according to their descent or evolution. The task before the systematist soon revealed itself as not so easy of accomplishment as it looked in the first flush of the new enlightenment. Owing to numberless extinctions in the past the gaps soon rose to greater prominence than the connecting links, and though these former have here and there been bridged since by the help of fossils, the imperfection of the geological record, one imagines, must ever be a bar to the complete realisation of the phylogenetic tree. At the same time it is well to bear in mind the imperfection of our knowledge of this record. Only a fraction of the fossiliferous rocks have as yet been thoroughly examined.

Respecting plants it has been aptly said that the brilliant discoveries in fossil botany made in recent years, from the time of Williamson onwards, have raised more problems than they have solved. This is equally true of the latest discovery of first-class importance, viz., Angiospermous fruits of Jurassic age, due to Dr Hamshaw Thomas, and named by him, the Caytoniales.* We are still very much in doubt as to the mode of evolution of the higher (vascular) plants. It is an open question whether they have had a single or multiple origin from the Algae, their presumed progenitors. Within the vascular plants themselves, the origin of the true Flowering Plants (Angiosperms), the outstanding puzzle in Darwin's time, remains almost as mysterious as ever; though the discovery and elucidation of certain fossil fructifications since, have permitted definite speculations to be advanced.

The rocks, so far, have given no clue as to which group of Flowering Plants may be deemed the oldest. Monocotyledons and Dicotyledons have been traced back to strata of almost equal antiquity. In fact, at present, there is no complete evidence of the existence of true Flowering Plants before the Cretaceous epoch, though their presence on the earth in the Jurassic age at least is to be inferred. In the Cretaceous rocks they appear as it were suddenly with world-wide distribution and multiplicity of form. As far as the investigation of these Cretaceous Angiosperms has gone no family has been distinguished which does not exist at the present time, and the genera too seem much the same. The American palaeobotanist, Professor E. W. Berry, however, from his recent studies considers that the difference between the Upper Cretaceous and Eocene Angiosperms has been underestimated in the past.* One point is fairly clear that these early Dicotyledons were very largely of the poly—and apetalous types. The Sympetalae (Gamopetalae) in the main probably evolved later in Tertiary times. Here again this assumption may require some modification. Professor Cockerell has recently drawn attention to the discovery of a labiate calyx in the Eocene, and remarks that "evidently we must look in the Mesozoic for the origin of the Labiatae!"† This is interesting, if not disconcerting, for Hutchinson regards this family as the *dernier cri* of the Dicotyledon. Still there is a consensus of opinion that on the whole the Sympetalae represent the highest group, recognising at the same time their multiple (polyphyletic) origin from the Polypetalae. At present comparative evidence is the only basis on which to form any opinion as to the relative primitiveness of the poly—and apetalous types of flower. Just as Monocotyledons and Dicotyledons have been traced back to rocks of an equal age, so have magnolias and catkin-bearing trees.

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*Phil. Trans. Roy. Soc., B, Vol. 213, p. 299, 1925.

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Turning to the history of Classification as it affects the Flowering Plant it is unnecessary to dwell in detail on the pre-Darwinian period. The narrative centres chiefly round the two opposing methods of arrangement, known respectively as the artificial and natural systems. The one culminated in the famous sexual system of Linnaeus, which for a long time dominated systematic botany, and was only gradually and all too slowly ousted by the natural system, associated especially with the names of Jussien and De Candolle. Linnaeus himself was aware that his ingenious artificial system based upon single characters often separated widely plants which had flowers obviously built upon the same plan; but such a system had necessarily to be applied rigidly, otherwise it would fail of its purpose. Not so with the natural system. Even though for purposes of general demarcation the single-character-criterion was used, *e.g.*, the corolla for the three main divisions of the Dicotyledons, it was not applied strictly, so as to do violence to obvious affinities. For instance, *Bocconia* without a corolla was placed with the Papaveraceae and not in the Apetalae, and *Correa* with united petals with the Rutaceae and not in the Gamopetalae.

It is well to keep these two methods of classification distinct in one's mind. The student may think that the artificial system is now merely a matter of history, but it is not so. It still has its value and is largely employed at the present day by systematists in the form of keys. One might call this system an art—a device in fact for the easy identification of plants; whereas the natural system is a science—the endeavour to arrange plants according to their evolutionary history or phylogeny. Mr Hutchinson of the Kew Herbarium has rendered systematic botany and the study of the flower good service in the publication of his recent

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Nature, Vol. 117, p. 804, 1926.

†Letter to *Nature*, Vol. 118, p. 696, 1926.

work, *The Families of Flowering Plants*, Vol. i., Dicotyledons. In this he not only arranges the Dicotyledons according to what he considers may have roughly been their course of evolution; but has also invented an artificial key to these families. The greater one's botanical knowledge the more advantage one can take of the natural (phylogenetic) system and the less need of the artificial one. The unlearned in botany who merely wants to find the names of flowers he comes across requires an easily applied artificial system. Mr Hutchinson's Key to the Dicotyledonous families (to be obtained separately) will be found of much use to plant-collectors and foresters working in the tropics and in regions little explored botanically. In this country where the families (natural orders) are comparatively few and circumscribed such a Key is not so needful. On the other hand, to those who take a genuine interest in the evolution of the flower and the relationship between one family and another, the phylogenetic in distinction from the descriptive part of his book should make a strong appeal.

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Considering the stimulus given to Biology generally by the acceptance of the mutability of species, it is a little strange that no immediate attempt was made to picture the evolution of the flower, and to place thereby the classification of the Angiosperms on a professedly phylogenetic basis. The system of De Candolle, adopted with modifications by Bentham and Hooker in their great work, the *Genera Plantarum*, contains what we think is the germ of a true evolutionary classification; even though there is evidence to the effect that these systematists did not regard their arrangement as phylogenetic. It was more perhaps as a happy chance that they commenced the Dicotyledons with the Ranalian families, such as Ranunculaceae, Magnoliaceae, etc.

A move really in the right direction was made as long ago as 1843 by Brongniart who suggested that the Apetalae (Monochlamydeae of De Candolle) could be regarded as degenerate forms of the Polypetalae. Looking back it is odd that this fertile idea was not embraced to the full. It was accepted in cases where it was fairly plain that the apetalous condition had arisen through the abortion of the petals, as, *e.g.*, in the Chenopods; but in instances where direct connections with petalous families were not manifest, the assumption was made that such plants were primitively apetalous, or naked if the perianth was wholly lacking. At any rate such are the inferences to be drawn from the works of Eichler and Engler—the commanding figures in floral morphology and taxonomy of the last quarter of the 19th century.

There were certain reasons then which have little weight to-day, for postulating the primitive nature of the catkin-flower and of other similar flowers of an apetalous character. It was generally recognised that of all extant gymnospermous plants, the Gnetaceae, composed of the three isolated genera, *Ephedra*, *Welwitschia* and *Gnetum*, come nearest the Angiosperms; and if any direct relationship exists it is to be found among the Apetalae. Several ingenious attempts have been made to connect the Gnetacean fructification with that of the catkin-bearing trees, but all have proved unconvincing. Treub's notable discovery of chalazogamy* in *Casuarina* was treated at first of primary phylogenetic importance and influenced Engler's classification for a time. Chalazogamy now can only be considered of minor taxonomic value, and is most likely not a primitive but a secondary feature. This together with the improbability of establishing direct relationship between the Gnetales and any apetalous family, undermines very largely the supposed primitiveness of the amentiferous flower. In consequence we think no further usefulness is served by placing these trees at the commencement of the Dicotyledons, as still prevails in Engler's system.

In the attempt to arrive at a comprehensive and rational theory respecting the evolution of the flower, it is necessary to come to a decision as regards the naturalness of the group, Angiospermae, itself; or in biological terminology to decide whether the Flowering Plants as a whole, including both Dicotyledons and Monocotyledons, should be viewed as a monophyletic or polyphyletic assemblage. Respecting the opposed group, the Gymnospermae, a polyphyletic origin is decidedly indicated. The Conifers and Cycads have little in common, and the Gnetales are a group quite apart. On analogy it might therefore be thought that the Angiospermae are of mixed stock. The writer, however, has little hesitation in declaring for a monophyletic origin of Flowering Plants as a whole —at any rate this would seem to be the more helpful and stimulating position to assume. To reduce the various types of sporophylls to be found in the Gymnosperms to one basic pattern for each sex is difficult, but it is otherwise with those of the Angiosperms. The same kind of stamen (microsporophyll) exists throughout the group, and this, though not quite so obvious, may be held equally true for the carpel (megasporophyll). In addition, what is perhaps still more significant, the male and female gametophytes (pollen-grain and embryo-sac) have likewise a similar structure throughout. The chance, one imagines, is remote of two or more independent evolutionary lines converging to such a degree as to reveal no essential differences in their sporophylls and gametophytes.

The acceptance of the monophyletic position envelopes Engler's classification in difficulties. On this arrangement the general evolutionary trend is held to be from flowers with no perianth through ones with a simple sepaloid perianth to ones with both calyx and corolla. A comparative survey fails to show how the perianth arises. Refuge can only be taken in the feeble idea that it has arisen *de novo* as a sudden outgrowth from the floral axis. Again following Engler we are almost forced to the difficult supposition that the unisexual can give rise to the hermaphrodite flower, as most naked flowers, those of the Amentiferae for example, are unisexual. There is no conclusive evidence that anything of the kind has occurred. On the contrary there is overwhelming evidence of perianth reduction to complete abortion, and also of unisexual flowers arising through the suppression of one set of sporophylls (stamens or carpels). No botanist, I fancy, would attempt to read the evidence the opposite way, as, for instance, to suggest that the naked flower of our native ash represents the primitive state in the genus, *Fraxinus*, or that the flower of *Lychnis dioica* is primitively unisexual. Then one may ask why maintain the primitiveness of unisexual and apetalous or naked flowers, when as it happens there are no obvious links connecting them to hermaphrodite and petalous forms. May not the transitional forms have become extinct? Imagine our native ash as the sole survivor of the family, Oleaceae, would not Engler and his followers have been inclined then to regard its flower as primitively naked?

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*Entry of the pollen-tube into the ovule by way of the chalaza instead of by that of the micropyle.

The fact that apetalous or naked flowers are, as a rule, grouped together in dense and often complicated inflorescences—witness the catkin—is worthy of emphasis. Such flower clusters can hardly be deemed a primitive method of arrangement. Some years ago the writer* endeavoured to show that the evolution of the inflorescence could be based on the view that the primitive arrangement (at any rate for trees and shrubs, which are broadly considered now to have preceded herbs) was that of solitarily disposed flowers, each terminating a leafy shoot. Clustering initially arises from the emission of lateral flowers from the leaf-axils below the terminal flower. As the inflorescence increases in complexity, the individual flower not only decreases in size, but also in the number of its parts. In very compact clusters the calyx tends to vanish or changes its function (cf. Compositae) as the bracts can now act as the protective organs. In the substitution of wind for insect pollination there is no need for petals, so these disappear. Thus can be derived an inflorescence of the catkin type, which practically functions as a single flower. Respecting the evolution of floral clustering, it is significant that solitary flowers terminating shoots are especially characteristic of the Magnoliaceae, which, from the position taken up in this article, are considered to have also the most primitive flowers.

There is plenty of evidence among existing flowering plants of the substitution of wind-pollination (anemophily) for that by insects (entomophily). When this takes place, as already mentioned, the petals abort as being no longer needed. It requires no great stretch of imagination to suppose that the amentiferous trees—so well adapted for wind-pollination—had originally entomophilous ancestors. In fact, it would appear in the present state of our knowledge to be a legitimate hypothesis to hold that Angiosperms, in contrast to Gymnosperms, were primitively entomophilous, and that all wind-pollinating true Flowering Plants now existing have descended from entomophilous ancestors. Indeed, the view may be put forward with a degree of probability that the insect-method of pollination was that prime factor in shaping the primitive Angiosperm, and in marking off the group so clearly from the rest of the higher plants. Such a theory harmonises with the position already taken up, which is based on comparative floral morphology, that the

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Journ. Linn. Soc. xlii., p. 511, 1914.

primitive Angiosperms had hermaphrodite flowers. On the supposition that pollen preceded honey as the attraction to insects no benefit would accrue to the plant if its flowers were unisexual, as only the male ones would be visited. It is interesting to note that the Gymnosperms (Cycads and Conifers) which are wind-pollinated and probably primitively so, have unisexual fructifications, and that also the drift in this direction is very marked among anemophilous Angiosperms.

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The invariable nature of the sequence of the stamens and carpels on the floral axis has not, owing to its familiarity, created the interest it perhaps deserves. The carpels are always borne morphologically above the stamens. No flower is known with the reverse sequence. Accepting the definition of a cone (strobilus) as an axis of limited growth closely beset with sporophylls, the flower can be visualised as arising from a bisexual cone. A strobilus of this kind hardly exists among Gymnosperms. The Conifers (except in the case of freaks) have unisexual cones, likewise the Cycads. The Gnetales are distinctly interesting in this connection. *Ephedra* and *Gnetum* have unisexual "flowers," but *Welwitschia* has the male flower structurally hermaphrodite, arranged on the Angiospermous plan. Respecting vascular plants below the Spermophyta (Phanerogamia) cones are to be found among the fossil Horsetails (Calamites) and Lycopods, and also in the existing genus, *Selaginella*. In these, strangely, the two kinds of sporophylls have the reverse position on the axis to that found in the Angiosperms, viz., megasporophylls below and microsporophylls above.

Considerable interest was aroused when Wieland, at the beginning of the century, elucidated the morphology of the fructification of those cycad-like Mesozoic plants, the Bennettitales. The structure was shown to be that of a bisexual strobilus with the two kinds of sporophylls obeying the Angiospermous sequence. Further, the cone was subtended by a protective perianth of bracts. A special name, *anthostrobilus*, was given to this kind of cone on account of its flower-like appearance. To derive the Angiosperms from such a group was tempting, but the character of the female part of the Bennettitean cone bars effectually any direct derivation. It does not preclude, however, the possibility of the Bennettitales and the ancestors of the Angiosperms proceeding from common stock with a generalised form of anthostrobilus. This speculation, sometimes termed the Bennettitalean theory of the origin of Angiosperms, but perhaps better the strobilate theory of Angiospermous descent, brings within one wide circle of affinity all plants known having the anthostrobilate form of fructification, viz., the Bennettitales, the Angiospermae, and the Gnetales. It is interesting that the last of these three groups can find within this theory a resting place. The male flower of *Welwitschia* structurally hermaphrodite points the way and indicates that the Gnetales arose from ancestors with bisexual flowers. They are regarded as a remnant with extreme reduction in the individual flower of a hypothetical group of plants with carpels still open which preceded the Angiosperms proper.

In fairness, let us now turn to the latest discovered group of fossil plants, the Caytoniales, since Dr Hamshaw Thomas has in a measure made them a basis of a rival speculation as to the origin of the Angiosperms.* His investigation of these fruit-bodies (barely the size of a currant) has been so painstaking and thorough that there can be little or no doubt as to his interpretation of their structure. We are also quite ready to accept his view that the fronds (*Sagenopteris*) and the microspore-bearing organs (*Antholithus*) found in the same matrix, though not in actual connection, represent respectively the foliage and microsporophylls of the Caytoniales. The fruit-bodies are distinctly angiospermous in the descriptive sense, since the seeds are enclosed in a cavity formed out of the sporophyll, and a stigma, a receptive spot for the pollen (microspores), appears to be present. The question naturally arises can these fruit-bodies be considered angiospermous in the phylogenetic sense? The sporophyll bearing these bodies was a pinnate or bipinnate non-foliaceous frond. There is no indication that these fronds were massed together into cones; the suggestion is rather that they were loosely arranged on the stem after the pteridospermous fashion. The "ovary" appears to have been formed by the turning in of the tip of the pinna (or pinnule). The ovules or seeds were borne on or near the midrib and not marginally. This form of angiospermy (seed-enclosure) is very different from that of the Flowering Plant as generally accepted. In the latter the whole carpellary leaf is involved in the enclosure and the ovules are moreover marginally borne. Dr Thomas has endeavoured to square matters with the true Angiosperm by imagining reduction to a single fruit body per sporophyll, and by bringing in Miss Saunders's theory of carpel polymorphism (not yet generally accepted) to explain the centrally borne seeds.

The microsporophyll attributed to the Caytoniales is also considered to have structural features in common with the androecium of the Flowering Plants. It would appear to be a much branched non-foliaceous frond, bearing at the tip of its ultimate ramifications a tuft of 3-6 sessile microspore-bearing bodies. Each of these is four-winged. Dr Thomas likens such a spore-case to the Angiospermous anther with its four pollen sacs. By reducing a sporophyll like the above to a single spore-producing body a passable resemblance to a stamen might be obtained, but the connective apparently would be missing!

The presence in these spore-cases of winged pollen grains is a significant discovery, indicating that the Caytoniales were markedly anemophilous. If this group has been ancestral to modern Angiosperms, what, may we ask, has become of the winged pollen grains? This very effective mechanism for anemophily is unknown among Angiosperms, though common in Conifers. Such a device might have been expected to have persisted in, for example, the supposedly primitive wind-pollinated Amentiferae!

If the Caytoniales bear resemblance of phylogenetic import to any other class of plants, then the Pteridosperms might be suggested. May

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Linnean Society Proceedings, 138th Session, p. 22, 1926.

they not be Mesozoic representatives of this great Palaeozoic group, which have evolved a form of angiospermy, independent in origin of that which gave rise to the true Flowering Plants? This discovery of seeds enveloped in a carpellary structure in plants, which otherwise have hardly a feature in common with modern Angiosperms, suggest that the flower as a whole rather than the enclosure of the ovules is the distinctive feature of the highest phylum of the vegetable kingdom, which would, in consequence, be better termed the *Anthophyta* than the Angiospermae.

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A rational scheme of floral evolution can be based on the view that the order (cohort) Ranales contains the families with the least modified flowers. In a general way from the type of flower exemplified by Magnolia all other forms are considered capable of being derived by reduction and modification. In short, a primitive flower is held to be hermaphrodite with its members indefinite in number free from one another, borne spirally on a long axis and with no clear differentiation of its perianth into calyx and corolla. A derivation such as this for all Angiospermous flowers has been spoken of as the Ranalian hypothesis.

One of the main, if not the most important, trend in floral evolution from the cone-like flower found in the Magnoliaceae, and to some extent in the Ranunculaceae, is the shortening and spreading out of the floral axis (receptacle), leading eventually to its "invagination,"* and the establishment of the perigynous and epigynous states. Perhaps—this is quite speculative—the original alighting place for visiting insects was the apical carpellary cone. With the flattening of the receptacle and the increased prominence and differentiation of the petals this has largely been transferred to the corolla. The compression of the floral axis tends to bring the anthers and stigmas into one plane and so facilitates pollination. It also entails reduction in the number of floral members and their disposition in whorls in place of the earlier spiral arrangement. Cohesion of floral members, especially noteworthy in the corolla and gynoecium, as well as the development of the zygomorphic flower are generally recognised as advanced stages. The evolution of the unisexual from the hermaphrodite flower, usually accompanied by the suppression of the petals and the substitution of anemophily for entomophily, has already been dealt with.

Taken in its general aspects such a view of floral evolution as the foregoing appears reasonable, and is eminently teachable. This cannot be said for that based on Engler's system. It hardly seems possible to derive the Ranalian flower from any kind of floral structure to be found among the catkin-trees and other Apetalae; but the reverse is quite feasible.

In pressing the reduction view respecting the evolution of the flower, it must not necessarily be assumed that here and there an increase in floral members may not have taken place. It is well, however, to remember that systematic botany was, and still is to some extent, dominated by the idea of the five-whorled pentamerous flower constituting the ground plan of the Dicotyledon, and the principles of doubling, splitting and branching may have been too freely called upon to account for whorls and also members in whorls greater than five. The Ranalian families to the older systematists were somewhat of a stumbling block, as their flowers were difficult to harmonise with the formal flower of five alternating pentamerous whorls. To those who embrace the Ranalian theory these families instead of mystifying, supply the key to the whole. Indefiniteness in all parts of the flower is what we are on the watch for and requires no explaining away.

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*Epigyny—or at least some forms of it—may have arisen through the adhesion of the bases of floral members to the gynoecium, rather than through the actual invagination of the receptacle.

Some reference must here be made to Dr Salisbury's recent papers on floral construction in the Ranales and Helobiales (Alismaceae, etc.).* His conclusions are at variance with the above, in that he considers a five-whorled trimerous flower or something tantamount to this to be the primitive condition for these groups, and all departures in the way of increase, even when the arrangement is spiral, to be derivative. He even suggests that such a flower as that of Magnolia may have originally come from one with its members arranged in definite whorls! To my way of thinking this is putting the cart before the horse with a vengeance! He bases his views on counts, and finds when the floral members are many they tend to be in multiples of three. May not the opposite inference be drawn from this? Respecting foliage leaves surely few would attempt to argue that the whorled arrangement taken on the whole has preceded the spiral. That in flowers three-membered whorls were differentiated earlier than five-whorled ones from the spiral arrangement appears probable on comparative evidence; and it may be that the Monocotyledons, which in the main are trimerous, separated off from the Dicotyledons before these had fixed a pentamerous type of flower.

Though Engler's classification has largely superseded De Candolle's on the Continent, it made tardy progress in this country, doubtless owing to the influence of Bentham and Hooker's system. Kew remained faithful to these systematists. When Sir Joseph Hooker was approached in 1907 on the subject, he replied to the effect that Engler's classification was no better phylogenetically than De Candolle's, and as regards convenience, not so good. Though Kew declined to arrange its herbarium or issue floras on Englerian lines, the German system gradually permeated and in certain quarters began to be followed with the sort of feeling of being up to date, when the phrase, out of date, might have been more appropriate! In the matter of systematic works devoted to the British flora, conservatism has mainly ruled, and we think rightly. There is one notable exception, viz., the incomplete sumptuous Cambridge British Flora, which is arranged on Engler's system. The Secretary of this Society in one of his recent annual reports uttered a lament to the effect that he supposed we would all have ultimately to adopt Engler's classifi-

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**Ann. Bot.* xxxiii., p. 47, 1919; xxxiv., p. 107, 1920: and xl., p. 419, 1926.

cation. I endeavoured to assure him otherwise, and this article is largely the outcome of the little correspondence we had over the matter.

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It seems probable that the Monocotyledons were a very early offshoot from a primitive Dicotyledonous stock. Their peculiar structural features are better explained thus than on the opposite assumption, consequently the placing of the Monocotyledons before the Dicotyledons we consider a primary defect in Engler's classification.

A noteworthy treatise on the Monocotyledons has recently appeared from the pen of Dr Agnes Arber,* the leading British authority on their morphology. This volume is the outcome of much original research on the morphology and anatomy of the root, stem, and leaf, and is particularly well illustrated by explanatory figures. The flower is only briefly touched upon. Besides the valuable descriptive part, there are thoughtful chapters—almost philosophical in their outlook—on the principles of morphology, on parallelism, and on biological evolution generally. The phylogenetical tree is reduced, as it were, to a bundle of sticks, specific and even generic characters are held to be non-adaptive, the Lamarckian and Darwinian positions rejected and refuge taken in the view that plant evolution has been pre-ordained! This is not the place to attempt any discussion of these somewhat sweeping conclusions, to which I feel many botanists will not be able to subscribe or only in a very modified way.

The author has a clever word to say on the single-cotyledon-puzzle. The fusion hypothesis, so ably put forward by the late Miss Ethel Sargant, is naturally discarded. The twin vascular bundle in the seed-leaf of the Monocotyledon upon which the theory was based has since been shown to be of common occurrence in the Dicotyledons. Dr Arber dismisses the puzzle of the missing cotyledon by asking why it should ever have been there, and suggests that " the growth rhythm happens to be of the type which produces a single leaf at the first node,"† instead of two. This is not altogether convincing, though I agree with her in regarding the cotyledons as the first leaves, and not organs *sui generis*. In this connection the few Dicotyledons known having single seed-leaves deserve consideration. Has not Dr A. W. Hill†† shown that the single cotyledon of Cyclamen arose through the abortion of the other one? If Dr Arber be correct in her supposition, monocotyly and dicotyly might have been expected to have turned up among Angiosperms in a haphazard fashion, like the occurrence of scattered and whorled foliage leaves. As it is dicotyly appears ancient and fixed, and any departure therefrom looks as if due to suppression.

The closed vascular bundle, the lack of secondary thickening after the dicotyledonous plan, the early disappearance of the primary root and the character of the leaf suggest that some special environment called the Monocotyledons into being. Something is to be said for Henslow's aquatic idea, and similarly for Miss Sargant's geophilous theory. May not a glimmer of truth lie between these two views? The argument advanced against the aquatic origin to the effect that the older the group the greater the likelihood of finding aquatic forms in it need not necessarily apply to Monocotyledons, though it may hold for Dicotyledons. The forerunners of the former may have taken to the water so long ago, as to give time for a fresh evolution of land forms, even to the production of trees. The great difference in structure between a palm stem and that of a dicotyledonous tree is in harmony with such a speculation. The return to an ancient habit entails a new device. Structurally evolution does not work backwards.

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*Monocotyledons—A Morphological Study—Cambridge, 1925.

†*loc. cit.*, p. 179..

††*Ann. Bot.* xxxiv., p. 417, 1920.

Even a stronger case can be submitted for the primitiveness of the hermaphrodite flower with perianth in Monocotyledons than in Dicotyledons. Engler concedes such a flower as the original for the Aroid family, but regards the flower of the somewhat isolated genus, *Typha*, as primitively unisexual and naked; yet he holds the Screw Pines as unisexual through abortion, being forced apparently to this conclusion through the occurrence of a rudimentary gynoecium in the male flower of *Freycinetia*, a genus of the Pandanaceae. In spite of this he places *Typha* in the same order (cohort) as this family. Are we to imagine that the unisexual Typha type gave rise to hermaphrodite forms now extinct, from which evolved the Pandanaceae with unisexual flowers due to reduction?

Assuming the origin of the Monocotyledons from the Dicotyledons, the question may be asked, are they to be regarded as mono—or polyphyletic—respecting their derivation from the latter? Though no satisfying answer can be given to this query, the writer sees no cogent reason at present for viewing the group as other than monophyletic. The Monocotyledons agree among themselves in so many features as to suggest a common origin. True, botanists have so far failed to trace satisfactorily all Monocotyledonous families to one original source, but this does not rule out the monophyletic standpoint. The earliest forms may quite easily have become extinct. We possess the main branches but not the trunk. A phyletic connection is distinctly suggested between the Helobieae (Alismaceae, Butomaceae, &c.) and the herbaceous Ranales, such as the Nympheaceae; but any linkage between the Helobieae and the Palms, for instance, is by no means obvious.

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Dr Rendle's *Classification of Flowering Plants* of the Cambridge Biological series may be considered at present the standard text-book on the Angiospermae from the descriptive and systematic sides. It is arranged on Englerian lines with slight modifications, and begins therefore with the Monocotyledons. The volume devoted to them was published early in the century. The companion volume on the Dicotyledons made its belated appearance at the end of 1925, and as far as information respecting the individual families, the illustrations and get-up generally is concerned leaves little to be desired and fills a gap in English botanical literature suitable for the advanced student. But we are bold enough to think that it may be the last of its kind arranged on the German system. It is interesting, therefore, to see what the author has to say in vol. ii. on classification from the phylogenetic side.

In the short introduction he writes (p. 2):—"The following arrangement does not claim to be strictly phylogenetic. Various attempts have been made to construct a phylogenetic system of Angiosperms, but the results are not convincing, bear no suggestion of permanence, and bristle with difficulties for the student." Such remarks, especially the bristling, are eminently applicable to the system he adopts! The following quotations bear on the supposed primitive character of the amentiferous or apetalous type of flower. "It seems likely that development of the highly differentiated insect-pollinated dichlamydeous flower was preceded by numerous, so to speak, experimental stages arising from earlier, now long extinct, Angiosperms, and it is a tenable view that such stages are represented among the Monochlamydeae" (p. 3). In referring to the three grades, as he terms them, evidently the apetalous, polypetalous, and sympetalous, he writes:—"The first grade includes orders with, on the whole, a comparatively simple type of flower . . . and while it is possible that some may be reduced forms . . . it is, on the other hand, possible to regard the members of this grade as representing lines of development from earlier extinct groups" (p. 3). In a recent review in the *Journal of Botany*,* he writes:—"It is a tenable view that some of the apetalous orders may be survivals of far earlier types than the Ranalian, and it is not a necessary corollary that the Ranalian type has been derived from the Apetalae." Again in his text-book (vol. ii., p. 40) referring to the catkin-families as a whole, he says:—"The frequent presence of a pistil-rudiment in the male flower suggests a derivation from a type with bisexual flowers, probably with a simple inconspicuous bracteole-like perianth." Do we not discern in the above quotations a movement, vacillating though it be, towards the "right" on Dr Rendle's part?! The probability of the derivation of the unisexual catkin flower from a hermaphrodite one is admitted. Why then, we may ask, should not families with bisexual flowers precede those with unisexual ones in classification, and would it not, therefore, be better to speak of the apetalous unisexual flower as a simplified rather than a single type of flower? Granted that there may have been experimental stages in the production of the highly differentiated flower with calyx and corolla, is it not more likely on the whole that relics of these stages should be found in the Ranalian families with their bisexual flowers, free and superior carpels, general indefiniteness in the number of floral numbers, and often feebly differentiated perianth; than in the Apetalae, and especially the Amentiferae, with their unisexual flowers, coherent often inferior carpels, and a general definiteness in floral parts. It is refreshing to have from a supporter of Engler a confession tantamount to the inability of deriving the Ranalian type of flower from the Amentiferous. We on the other hand see no difficulty in visualising the reverse derivation.

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*Vol. 64, p. 81, 1926.

A phylogenetic scheme on Ranalian lines has been worked out with much skill and originality for the Dicotyledons by Mr J. Hutchinson of the Kew Herbarium in his recently published book, *The Families of Flowering Plants*, vol. i., Dicotyledons, already mentioned. A companion volume on the Monocotyledons is to follow in due course. The new system proposed which is now being used at Kew, for the official regional Floras of Tropical Africa, is much less of a break with the past than that of Engler, as the Ranalian families still occupy their time-honoured place at the beginning of the Angiosperms. Hutchinson's orders and families are of somewhat less dimensions than those of Engler and previous systematists, the idea being to make them more natural and less unwieldy. For instance, he divides the old Ranales into the Magnoliales (arborescent) and the Ranales (now used in the strict sense —herbaceous). The old family, Magnoliaceae, is limited to the genera, *Magnolia* and its close allies, and *Liriodendron* (Tulip Tree), making a very natural assemblage. The other genera previously included form the separate families, Winteraceae (*Drimys*, &c.) and Schizandraceae. He raises to full family rank the Caesalpinieae, Mimoseae, and the Papilionaceae; and thereby the Leguminosae reaches the status of order. The old heterogeneous family, Saxifragaceae, meets with needful drastic treatment. Such genera as *Ribes*, *Hydrangea*, and *Escallonia* form the nuclei respectively of separate families. Hutchinson fails to find existing any direct link between the Magnoliales and the Ranales as now used. These two orders form as it were a double base to the Dicotyledons, and from them he derives the higher Dicotyledons in two branches, one mainly arborescent and the other herbaceous. Each gives its quota to the Apetalae and each culminates in sympetalous forms. The point of dispute, the position of the Amentiferae, is met by supposing their derivation from the Hamamelidaceae. This is not really novel. Hallier put it forward some years ago and research since has suggested affinity between the catkin trees and the Rosales in the wide sense. The passage from the Magnolian type of flower to that of catkin may in quite a general way be represented as via the Trochodendraceae and the Hamamelidaceae. These families need closer scrutiny than they have yet received. Monotypic and isolated genera occur here, *e.g.*, *Eucommia*. We should feel thankful to Hutchinson for this stimulating work. It has raised us out of a groove. Those who have never been enamoured of the Engler system should welcome it, and the best way of welcoming it is by sympathetic criticism.

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And now for the application of my sermon. How does all the foregoing affect the classification to be adopted in our local floras? As these have in the past been mainly based on Bentham and Hooker, the change to be made is not revolutionary. There need be few startling alterations in the arrangement of the Polypetalae and Sympetalae. The British

Dicotyledons will continue to begin with the Ranunculaceae, and the Sympetalae will end with the Labiatae as in the past.

Let us deal with the sequence of the largest groupings first. The Monocotyledons, as in Bentham and Hooker's system, will still follow the Dicotyledons, but the Conifers (*Pinus*, *Juniperus* and *Taxus*) must no longer be sandwiched between the two. Such a position is quite out of date. Apart, perhaps, from the Gnetales, not represented in Great Britain, the Gymnosperms (Cycads and Conifers) have little in common with the Angiosperms, being of a lower grade of organisation. They should, therefore, precede the Flowering Plants as a whole and the Vascular Cryptogams or Pteridophyta (Ferns, Club Mosses and Horsetails), likewise the Gymnosperms. Though illogical, viewed phylogenetically the few conifers and vascular cryptogams may for convenience be relegated to the end of a manual as an appendix considering the subordinate part they play in our flora. Dr Burtt Davy in his *Flora of the Transvaal*, part 1 of which has quite recently been published, is arranged according to Hutchinson's new scheme, and conforms to the phylogenetic sequence, commencing with the Pteridophyta, followed by the Gymnosperms and then the Dicotyledons.

The manner of treatment of the Apetalae in Hutchinson's new arrangement naturally marks the widest departure from the old Bentham and Hooker system. Engler, and we think rightly, united this group with the Polypetalae and designated the whole, the Archichlamydeae, contrasting it with the Sympetalae, which to harmonise he called the Metachlamydeae. These terms, though clumsy and cacophonic, are by derivation apt and have been adopted by Hutchinson. Engler, as already pointed out, commences the Dicotyledons with apetalous instead of Ranalian families. Rendle, though following Engler's sequence, restores the Apetalae (using the alternative, Monochlamydeae) and employs the term, Dialypetalae, for the Polypetalae. We are doubtful of the advantage of either of these changes. His Monochlamydeae has perforce now to include such marked petalous forms as the Caryophyllaceae, and on the other hand such typically apetalous families as the Buxaceae and Euphorbiaceae have to appear in his petalous group. Dialypetalae is a much less familiar term than Polypetalae.

The Apetalae from our standpoint being derivable from the Polypetalae and none from the Sympetalae, should be more closely associated with the former group. Hutchinson distributes the apetalous families among the polypetalous according to the affinities indicated by their floral structure. The striking case is the linking-up of Bentham and Hooker's Caryophyllinae with their Curvembryae. This, of course, was done by Engler, but he in his composite cohort, Centrospermae, begins with the families having a simple perianth, and ends with the Caryophylls. Hutchinson naturally follows the opposite sequence, indicating thereby that the petals have been lost in the Chenopods and the like. It is interesting to find from a footnote in the *Genera Plantarum* that Bentham and Hooker were quite aware that affinity was violated by keeping the Caryophylls and the Chenopods apart. The Polygonaceae are also to be drawn into the same wide circle of relationship. Except for the foregoing most of the old apetalous families would, in a British Flora, assemble themselves towards the end of the Polypetalae. This is a more rational position than at the end of the Sympetalae.

The arrangement of the Monocotyledons in Bentham and Hooker's system now leaves much to be desired, and that of Engler is a considerable improvement as regards the way the families are allotted to cohorts. He commences with the Typhaceae. We should prefer beginning with the Helobieae, thus harmonising with the position the Ranales occupy in the Dicotyledonous sequence. Further discussion had better be left until we have seen how Hutchinson proposes to deal with the Monocotyledons, save to say that we think the Orchidaceae and the Gramineae should be placed at the head of the petalous and apetalous families respectively

NEW FORMS OF *THYMUS* FROM THE BRITISH ISLANDS.

By Karl Ronniger, Vienna.

Translated by Dr S. H. Vines, F.R.S.

The kind intervention of Mr A. J. Wilmott has made it possible for me to go through the rich *Thymus* material of the British Museum. I reserve for a subsequent occasion the account of their distribution and the discussion of the extent of their variation. But as Dr G. C. Druce desires to have a short contribution on the subject for this *Report*, I now propose to describe two forms new to England, which I found in the British Museum material, of which one is, moreover, new to science.

1. **Thymus carniolicus** Borbas, apud Déségl. in Bull. Soc. Sci. Angers, 1882, p. 191 (nomen): Oesterr. Bot. Zeitschrift 1889, p. 275 (descript.); Borbás, Symbolae ad Thymos eur. med. praec. hung. cogn. 1890, p. 104.

This plant belongs on the whole to *T. Froelichianus* Opiz, *Nomenclat. Bot.* (1831), p. 80: compare Ronniger in Fedde, *Repertorium* xx. (1924), p. 661, and *Allg. Bot. Zeitschrift* xxvi.-vii. (1925), p. 19. It may also be called *T. Froelichianus*, ssp. *carniolicus*.

Plant 8-10 cm. high (even taller on the continent), of pseudo-repent habit, having creeping runners, short. Stem thin, ½-¾ mm. in thickness, decumbent at base. The sharply quadrangular stem bears two rows (goniotrichous) of closely set longer and shorter hairs: the longer hairs exceed the diameter of the stem. Leaves thin, broadly lanceolate or elliptical, rounded towards the apex, rapidly narrowing at the base, densely hairy on the upper surface, with long marginal cilia (1.5 mm.), under surface glabrous or with scattered hairs: the nervature does not project on the under surface; 6-8 mm. long, 3-4 mm. broad. Capitula usually elongate, interrupted, rarely short and globular. Peduncle bears close, short retrose hairs. Calyx 3 mm. long, densely covered with villous hairs, except on the dorsal surface which is nearly glabrous.

In its habit the plant resembles *T. glaber* Mill., more particularly the broad-leaved forms of that species: but it differs from them in the villous hairiness of all its parts. It is, in fact, closely related to *T. glaber.*

As regards *T. glaber* Mill. itself, it will become necessary to distinguish its broad-leaved forms (leaf more ovate, ± twice as long as broad) as f. *Chamaedrys* (Fries), from the narrow-leaved forms (leaf more lanceolate, ± three times as long as broad) = f. *glaber* (Mill.).

T. carniolicus Borbás is a decidedly Atlantic, West European species, which is not rare in France and Spain: in Germany it inhabits only the extreme west (Grand Duchy of Baden, upper valley of the Danube). North of the Alps it extends as far as the Vorarlberg; south of the Alps it is distributed in a narrow zone as far as Carniola and Fiume: it has also an outlying locality in the Lungan (Salzburg, upper valley of the Mar).

Localities in England:—Wigtonshire, Barnbarroch (leg. E. K. Higgins); Cambridgeshire, Gogmagogs (Hunnybun: leg. E. S. Marshall); Sussex, Telscombe (leg. T. Hilton).

2. THYMUS PSEUDO-LANUGINOSUS Ronniger ined.

Allied to *T. Serpyllum* L., more particularly to the race *T. britannicus* Ronn., from which it differs in the dense greyish villosity of all its parts. Its main stem is long and creeping, terminating in a sterile prostrate shoot and bearing sterile prostrate lateral shoots: but isolated floriferous shoots are not infrequent in all races of *T. Serpyllum*. The flowering branches are low, about 4-7 cm. high, springing in rows from the stolons of the previous years; glabrous on two sides, bearing on the two alternate sides dense outstanding hairs. Leaves small, rather thick, rigid, 7-nerved (nerves projecting on the under surface), more or less narrowly elliptical, rounded at the apex, cuneate at the base, 4-6 mm. long, 1½-3 mm. broad, densely grey-villous, the lower side less densely hairy. Inflorescence spherical, rarely somewhat elongated, at most 1½ cm. in diameter (in bisexual specimens). Calyx villous all over (the dorsal hairs short), 3½-4 mm. long, upper calyx-teeth short, about as broad as long.

Localities:—Dorsetshire, cliffs between Swanage and Dancing Ledge (leg. C. E. Salmon), and Durlstone (leg. E. F. Linton).

NOTE ON NOMENCLATURE.

By G. Claridge Druce, D.Sc., LL.D.

(Sent to the Botanical Congress at Ithaca, 1926.)

While there is much in the Vienna Actes with which all botanists agree there are some of its clauses which are arbitrary and not in the interest of botanical science.

Therefore I strongly support the Revocation of Art. 36, which makes the validity of publication of a group or species contingent on its being accompanied by a Latin diagnosis. This has well nigh passed into desuetude. There is only one thing worse than having no rule at all—that of having a rule which no one follows. It may be found desirable to limit the diagnosis to the English, French, Italian, Spanish and German languages.

It has been suggested that names which are to be rejected are those "which are apt to excite ridicule." Who is to decide what is ridiculous? What would excite risibility in one individual leaves another cold. See Art. 50. *Barbarea Barbarea* appears to have raised the risibility of some of Engler's students, but such a duplicated name to the zoologists (See Art. 6, "The principles and forms of nomenclature should be as similar as possible in Botany and Zoology.) would not cause a smile. Yet the Actes, while rejecting duplicated names allow *Sagina Saginoides* and *Sesbania Sesban*. These are perilously near a duplication, yet have the advantage of conveying something of the history of the species.

The rejection of misleading geographical names has been recommended. This may lead to considerable alterations and seems undesirable. (See Art. 57.) Most people know that *Scilla peruviana* L. does not come from Peru, and there is no need to use the later name of *Scilla hemispherica* Boissier. If the method were adopted, why should it be limited to geographical errors? Indeed Rouy (*Fl. Fr.* xiii.-xiv., 216) forestalls this question and renames, or rather discards, *Bromus sterilis* L. because it is not sterile, and *Papaver hybridum* L. and *Roemeria hybrida* DC. because they are not hybrids, and so on. Anderson alters Hall's *Rubus nessensis* to *R. suberectus* And. (a name still wrongly used by some botanists) because the plant was not confined to Loch Ness-side—but he had not sufficient temerity to attempt to change *Cornus suecica* L. because that plant grew elsewhere than in Sweden.

It is, however, Article 20 that has aroused the greatest amount of opposition. It provides "a list of names which must be retained in all cases," the excuse being "to avoid disadvantageous changes in the nomenclature of genera by the strict application of the principle of priority in starting from 1753." This is not in accord with Art. 3, which runs, "The rules of nomenclature should neither be arbitrary nor imposed by authority. They must be simple and founded on considerations, clear and forcible enough for everyone to comprehend, and be disposed to accept," and with Art. 19, " Botanical nomenclature begins with the *Species Plantarum* of Linnaeus, ed. i., 1753, for all groups of vascular plants."

Art. 20 was not carried without opposition, and voters on the question were not necessarily taxonomists or experts on the subject of nomenclature. The List of Conserved Names was not drawn up with necessary care, many of the names being already dealt with under other rules. It was eminently unfair in its selection and contains gross anomalies. Nor was the avowed object greatly aided since many of the conserved generic names include few species. Many important authorities ignore them, in others only a grudging and qualified assent is given. The disadvantage of such a course is evident. I heartily endorse what was written in the *Bulletin of the Torrey Botanical Club* for April 1907, " that they regard [exclusion of several hundred generic names from the operation of all nomenclatorial rules] as in the highest degree arbitrary, as controverting a cardinal principle." Therefore, in my *List of British Plants*, published in 1908, the Nomina Conservanda were, with one exception, deliberately ignored. The years that have elapsed since have not shaken my attitude, and not until a well-selected committee of competent authorities has dealt with the subject and submitted to a meeting for acceptance a small list, the fewer the better, of conserved names will one's objections be overruled.

As showing how ill-selected and in what an arbitrary manner the List of Nomina Conservanda was framed, a few examples are given here.

NOMINA CONSERVANDA, VIENNA 1905. NOMINA CORRIGENDA 1926.

6994. CALYSTEGIA R. Br. Prod. 483, 1810 = VOLVULUS Medik. in Phys. i., 202, 1791. Species 7.

Medikus established it with the species *V. sepium*. It is used by Kuntze in *Rev. Gen. Pl.* and *List of Brit. Pl.*

2986. CAPSELLA Medik. Pflanz. i., 85, 1792 = BURSA (Weber) in Wigg. Prim. Fl. Holsat. 47, 1780. Species 4.

Also brought into citation by Boehmer in *Ludv.*, 1760.

The name *Bursa* is very ancient, being used by Dorstenius in the *Botanicon* of 1540, by Turner in his *Names of Herbes* of 1548, etc. *Capsella* is a faulty modern name. *Bursa* is a properly defined genus with a species added. It is used by Groves in Babington's *Manual* of 1904, in the *American Check List* and *List of Brit. Pl.*

2858. CORYDALIS Ventenat in Choix 1802 = CAPNOIDES (Tourn.) Miller Abr. 1754 et Adans. Fam. ii., 431, 1763. Species 90.

Capnoides is used by Moench (*Methodus* 152, 1794), who described four species under it, by Kuntze (as *Capnodes*) in *Rev. Gen.*, by Groves (*l.c.*) and in the *American Check List* and *List of Brit. Pl.*

There are other earlier names than *Corydalis*.

269. CORYNEPHORUS Beauv. Agr. 90, 1812 = WEINGAERTNERIA Bernh. Syst. 23, 1800. Species 2.

Beauvois' name is clearly antedated. *Weingaertneria* was used (misspelled) by Bentham in *Journ. Linn. Soc.* 1881, by Groves (*l.c.*), and in Rendle & Br. *Brit. Seed-Plants* 1907, and in the American and British Lists.

282. CYNODON Rich. in Pers. Syn. 85, 1805 = CAPRIOLA Adans. Fam. ii., 31, 1763. Species 4.

Dactilon Vill. and *Fibichia* Koehl also are earlier names than *Cynodon*. *Capriola Dactylon* was named by Kuntze in American and British Plant Lists, by Groves (*l.c.*).

6195. DABEOCIA D. Don in Ed. Phil. Journ. 160, 1834 = BORETTA Neck. Elem. ii., 212, 1790. Species 1.

Boretta is used by Kuntze (*l.c.*), Groves (*l.c.*), Rendle & Brit. (*l.c.*). *List of Brit. Pl.*, etc.

2856. DICENTRA Bernh. in Linnaea 8, 457, 1833 = CAPNORCHIS (Lud.) Miller Abr. 1754. Species 15.

Borck. in *Roem. Arch.* i., ii., 46, 1797, named *C. spectabilis*, and Planchon in 1853-4 named under it four species. There are other earlier names than *Dicentra*, which is clearly antedated by *Capnorchis*.

2528. ERANTHIS Salisb. in Tr. Linn. Soc. 8, 303, 1807 = CAMMARUM Hill Brit. Herb. 47, 1756. Species 7.

This was well defined and figured by Hill; it is used by Greene, Groves (*l.c.*), and *List of Brit. Pl.*, etc.

C. hyemale Greene is the type. *Helleboroides* Adanson of 1763 is also earlier than *Eranthis*.

6018. FALCARIA (Riv.) Host Fl. Austr. i., 381, 1807 = PRIONITIS Adans. Fam. ii., 499, 1763. Species 4.

Prionitis is used by Dumortier *Fl. Belg.* with species in 1823.

276. HIEROCHLOE (Gmel.) R. Br. Prod. 218, 1810 = SAVASTANA Schrank Baier Fl. i., 100, 1789. Species 13.

Established by Schrank with one species. Used in *American Check List*, *List of Brit. Pl.*, etc.

Torresia Ruiz & Pavon 1794 is also earlier than R. Brown.

1893. HYMENOCARPUS Savi Fl. Pis. ii., 205, 1798 = CIRCINNUS Medik. Species 1.

Established by Medikus *Vorles* ii., 384, 1787, with a species, and used by Kuntze in *Rev. Gen. Pl.* and *List of Brit. Pl.*

374. LAMARCKIA Moench Meth. 201, 1794 = ACHYRODES Boehm. in Ludw. Def. Pl. 420, 1760. Species 1.

Achyrodes was revived by Kuntze (*l.c.*).

94. **Leersia** Swartz Prod. 21, 1788 = **Homalocenchrus** Mieg. in Act. Helv. iv., 307, 1760, et Scop. Intr. 73, 1777. Species 5.

Pollich. *Hist. Pl. Pal.* in 1777, put a species to it. It is adopted in the *American Check List*, Groves (*l.c.*) *List of Brit. Pl.*, etc.

937. **Luzula** DC. in L. & DC. Fl. Fr. iii., 158, 1805 = **Juncoides** Adans. Fam. ii., 47, 1763. Species 40.

Juncoides was revived by Kuntze (*l.c.*). Used in *American Check List*, *List of Brit. Pl.*, Groves (*l.c.*), etc. Smith (because *Luzula* was a faulty name) founded *Luciola*.

119. **Maianthemum** Web. in Wigg. Prim. Fl. Holsat. 14, 1780 = **Unifolium** (Moehr.) Adans. Fam. ii., 54, 1763. Species 2.

Unifolium is used with a species by Allioni *Fl. Pedem.* 1785, in *American Check List*, *List of Brit. Pl.*, etc.

We see that *Bursa* founded by Weber is rejected for the later *Capsella*. Here another, but a much antedated genus of the same author in the same publication, is retained.

3032. **Malcomia** Br. Ait. Hort. Kew. iv., 121, 1812 = **Wilckia** Scop. Intr. 317, 1777. Species 30.

Established, with a species, by Scopoli and used by F. von Mueller and others.

7102. **Mertensia** Roth Cat. i., 24, 1797 = **Pneumaria** Hill Veg. Syst. vii., 50, 1764. Special 15.

Clearly established by Hill in an important work with three described species. Used in Groves (*l.c.*), *American Check List*, *List of Brit. Pl.*, etc.

The type is *Pneumaria maritima* Hill.

2965. **Nasturtium** Br. in Ait. Hort. Kew. iv., 109, 1812 = **Radicula** (Dill.) Hill Brit. Herb. 265, 1756. Species 50.

Radicula is used by Moench Meth. 262, 1794, with species by Groves (*l.c.*), *List of Brit. Pl.*, Rendle & Br. (*l.c.*).

Radicula antedates *Rorippa* Scop. *Fl. Carn.* 520, 1760.

9464. **Silybum** (Vaill.) Adans. Fam. ii., 116, 1763 = **Mariana** Hill Veg. Syst. iv., 19, 1762. Species 2.

Mariana is clearly established by Hill in an important work with a described species. Used by Groves (*l.c.*), *List of Brit. Pl.*, etc.

Silybum Marianum was not named until 1791 by Gaertner. Its retention is indefensible.

987. **Simethis** Kunth Enum. Pl. iv., 618, 1843 = **Pubilaria** Rafin. Fl. Tell. ii., 27, 1836. Species 1.

The genus was clearly defined by Rafinesque seven years before *Simethis*. It is used by Groves (*l.c.*), *List of Brit. Pl.*, etc.

The type is *P. planifolia*.

2261. SUAEDA Forsk. Fl. Ae.-Arab. 69, 1775 = DONDIA Adans. Fam. ii., 761, 1763. Species 40.

Dondia is used by Britton & Brown in *Flora of the North. U.S.*, by Small in *Bull. New York Gard.*, by Heller in *Cat. N.A. Pl.*, by Nelson in *Coult. Bot. Gaz.*, and Druce in *List of Brit. Pl.*, and others. It is older than *Lerchea.*

Dondia maritima Dr. is the type.

143. TRAGUS Haller St Helv. 203, 1768 = NAZIA Adans. Fam. ii., 31, 1763. Species 1.

Tragus Haller had no species, but Scopoli in 1777 described *T. racemosus. Nazia* was adopted by Kuntze (*l.c.*).

5998. TRINIA Hoffm. Gen. 92, 1814 = APINELLA Neck. Elem. i., 191, 1790. Species 12.

Apinella glauca is used in *Druce Fl. Berks*, by Kuntze in *Rev. Gen. Pl.*, by Caruel and Groves (*l.c.*).

8668. WAHLENBERGIA Schrad. Cat. Pl. Hort. Goett. 1814 = CERVICINA Delile Flore d'Egypte 150, 1813. Species 100.

This genus was well defined, with a figured species duly named in an important work. It has been used by Groves (*l.c.*), Britten in *Bot. Cook Voyage*, p. 56, Hiern *Cat. Afr. Pl.* i., 631, Druce *Fl. Berks* and *List of Brit. Pl.*

Cervicina campanuloides Delile is the type. The conserved name was published in an unimportant work without a species. In other publications Schrader included plants of different genera. There are two other genera bearing the name *Wahlenbergia*, neither of which are competing names. Its retention is unjustifiable. A. de Candolle, in his Monograph, unfortunately overlooked the claims of *Cervicina.*

These examples are selected chiefly from genera containing British species, and emphasise the lack of uniformity and the extraordinary and arbitrary methods of selection.

One is struck at the smallness of many genera in the list. 17 of these instanced here would necessitate the alteration of only 120 names, the whole of the cited genera would not involve more than 500. For this temporary inconvenience—few of the species are hortal—is it worth while to sacrifice a great principle, and to create a hostile feeling caused by its unfairness?

The erratic choice of conserved names is shown in that while *Silybum* is cited for Adanson, that author's *Nazia* and *Dondia*, equally well founded, are rejected; that Medikus, whose genus *Capsella* is wrongly conserved (as against the earlier *Bursa*) is erroneously rejected in the case of *Volvulus* and *Circinnus.*

Again Weber is wrongly chosen for *Maianthemum* but ignored for *Bursa*, both published in the same work.

It is probable that the framers of the Nomina Conservanda were unacquainted with Miller's *Gardeners' Dictionary* of 1754 and Hill's

British Herbal of 1756, but both are important works prepared by competent botanists, and are as available for citation under the Actes as are those of Adanson, Scopoli 1760, and others, whose names are used for genera.

I am prepared to move a Proposition that the foregoing genera, and others which are inserted in the List of Nomina Conservanda in defiance of the Rule of Priority, shall be deleted when there exist earlier, well-defined, and unexceptionable names that have been used or revived by botanists in important systematic works.

A REVISION OF THE DETERMINATIONS OF THE GRASSES OF THE *FESTUCA OVINA-RUBRA* GROUP.

Distributed under the Botanical Exchange Club of the British Isles and Recorded in its *Reports* since the First Issue in 1867.

By W. O. Howarth, M.Sc., F.L.S.

In my investigation of the above group I have examined a number of collections, both public and private, in which Botanical Exchange Club specimens are represented. This especially applies to the Herbarium Britannicum in the hands of the Secretary, Dr G. Claridge Druce, and the collection of the late Mr Charles Bailey, now in the possession of the University of Manchester. I have been able to trace practically all the plants referred to in the *Reports*, and in so doing have had to correct the determinations of some. Members of the Club and others, who have these plants in their herbaria, will doubtless be glad of the opportunity of revising their labels, and it is with this object in view that this paper is presented. Those interested are referred to Hackel's *Monographia Festucarum europaearum* (1882), and to my two papers in the *Journal of the Linnean Society*—" Botany," vol. xlvi., p. 313, January 1924; and vol. xlvii., p. 29, February 1925. In each case I give the year for which the *Report* is published, followed by the page and sufficient of the label to ensure correct identification of the specimen, then the name according (a) to Hackel, and (b) to myself, where the plant is first mentioned.

1871, 21. " Sandhills, Wallasey, Cheshire," J. H. Lewis.
Festuca rubra, *eu-rubra*, *genuina*, near sub-var. *arenaria* Hack., but not a typical specimen. Different panicles vary in the amount of pubescence on the spikelets.
F. rubra, near var. *arenaria* mihi.

1879, 22. " Burntisland, Fife, June 1879," Dr J. Boswell.
F. rubra, *eu-rubra*, *genuina*, sub-var. *glaucescens*.
F. rubra, var. *glaucescens*.

" Wallasey, Cheshire, July 1879," Lewis. I have not seen any of this gathering, but in 1875 Mr Lewis distributed plants similar to those of his 1871 gathering above.

" Sea cliffs near Cawsand, E. Cornwall, 9th July 1878." Ley.

F. rubra, *eu-rubra*, *genuina*, sub-var. *pruinosa*.

F. rubra, var. *pruinosa* under *glaucescens*, but I now regard these as two distinct varieties.

1880, 38. " Close turf, Herefordshire Beacon, 20th May 1880," Ley.

F. ovina, *eu-ovina*, *vulgaris*, sub-var. *genuina*.

F. ovina L., but probably the glaucous-green form scarcely distinguishable from the more common type in dried material.

1881, 59. " Rough pasture, Treverannen, Hereford, 25th June 1881," Ley. As preceding.

" Hill Wootton, Warwick, June 1881," Baker.

" July 1881," Bromwich.

F. ovina, *eu-ovina*, *duriuscula*, sub-var. *genuina*.

F. longifolia, var. *genuina*.

There is some *F. ovina* L. in Mr Baker's gathering.

1884, 119. " Uig, Skye, 6th August 1884," Linton.

F. rubra, *eu-rubra*, *genuina*, sub-var. *pruinosa*.

This is the type gathering upon which Hackel founded his sub-var. *pruinosa*. On other parts of the west coast it passes into sub-var. *glaucescens*, and is connected with this rather than with sub-var. *juncea*.

1885, 140. " Railway bank, Leek Wootton, Warw., June 1885," Bromwich. See under 1881, 59, Hill Wootton.

" Near Banbury, Oxon," G. C. Druce.

F. ovina, *eu-ovina*, *duriuscula*, sub-var. *trachyphylla*.

F. longifolia; var. *trachyphylla*.

I have not seen a specimen to verify this determination.

1886, 162. " Sandy Dunes, Caister by Yarmouth, Norfolk, 23rd August 1886," Linton.

The panicles on the sheets I have examined have hispid spikelets. This places such plants under *F. rubra*, *eu-rubra*, *genuina*, sub-var. *barbata*, and not sub-var. *grandiflora* as determined by Hackel.

F. rubra, var. *dumetorum* mihi.

1887, 194. " Hedge Court, Surrey, 1887," Beeby, and " Leek Wootton, Warw., 1884," Bromwich.

If a true species the correct name is *F. capillata* Lam., and so in my paper. If a variety of *F. ovina*, as in Hackel, then the name is either *F. ovina*, var. *paludosa* Gaud. (1828) or var. *tenuifolia* (Sibth.) Dub. (*Bot. Gall.* i., 518, 1828).

1888, 239. " Sunninghill, Berks, July 1887," Druce. As preceding.

" Shady hedgebank, near Chislehurst, Kent, August 1888," Eyre de Crespigny.

F. rubra, eu-rubra, genuina, vulgaris since some of the plants have short stolons.

F. rubra, vulgaris mihi.

" Stow Wood, Oxon, June 1887," Druce.

F. rubra, eu-rubra, fallax. If a true species the name is *F. fallax* Thuill., if a variety, *F. rubra, commutata* Gaud.

1890, 315. " Sandhills, Hartlepool, 11th July 1889," Fox.

This is one of the forms intermediate between *F. rubra, eu-rubra, genuina,* sub-var. *arenaria* (*F. rubra, arenaria* Osb.), and *F. rubra,* sub-sp. *dumetorum* (*F. juncifolia* St Am.) but nearer to the latter, under which I should place it.

1892, 392. Hackel gave the correct names to all four.

1894, 462. " Rocks of the Avon, below Aveton Gifford, S. Devon, 20th June 1894," Marshall.

Hackel names it *F. rubra,* sub-var. *glaucescens,* but I should rather place it under his sub-var. *pruinosa,* if the two are to be kept distinct. See under 1884.

463. " Coast, Bigbury Bay, S. Devon, 22nd June 1894," Marshall.

Here again I think the plant ought to be named sub-var. *pruinosa,* the spikelets are quite glabrous.

I agree with the names of the other two.

1896, 531. " St Bee's Head, Cumberland, 13th June 1896," Adair. As the preceding, but see also under 1900.

1896, 531. " Sands of St Aubyn's Bay, Jersey, 18th June 1896." Lester.

F. rubra, eu-rubra, genuina, sub-var. *grandiflora* Hack.

F. rubra, var. *grandiflora* mihi.

1897, 577. I have not been able to trace either of these sheets.

1900, 651. " St Bee's Head, Cumberland, 15th June 1900," Adair.

This gathering included a range of pruinose forms, from those with smooth through hispidulous to pubescent spikelets. Probably Hackel had one of the last type, and gave the name as sub-var. *barbata,* but overlooked the pruinose character. The forms with smooth spikelets really belong to sub-var. *pruinosa,* those with hispidulous spikelets are true *glaucescens.* This gathering shows the close link between the two forms. Then the hispid character has become more pronounced still in some, giving the pubescence characteristic of sub-var *barbata.* Altogether it is a very interesting set.

1903, 31-2. I agree with all the names given by Hackel. Note in the last-mentioned that *juncea* is a sub-variety in Hackel.

1904, 39. Correctly named by Hackel.

1905, 50. " Sandy shore, Skegness, 13th June 1905," Horwood.

F. rubra, eu-rubra, genuina, vulgaris Hack.

F. rubra L., not *F. ovina* L. as suggested by E.S.M.

Same locality and date, under " *F. rubra* L., *arenaria* Osb." Some of the sheets examined approximate to *F. rubra,* *genuina, grandiflora* in that their spikelets are quite glabrous. Others with decidedly pubescent spikelets are intermediate between *F. rubra, genuina, arenaria*, and *F. rubra*, sub-sp. *dumetorum*, but nearer to the former. Both types are present at Skegness, and intermediates abound probably through hybridisation. See 1911, p. 141.

1906, 251. "Heysham Harbour, 10th July 1906," Wilson and Wheldon.
F. rubra, genuina, vulgaris.
"Sandhills, Weston-super-Mare, 22nd June 1906," Bickham.
There appear to be two types in this gathering:—*F. rubra, genuina, glaucescens*, and *arenaria*.

1907, 322. "Inchnadamph, July 1907," Druce.
F. ovina, capillata Hack.
"Correifron, 9th August, and Midlaw Burn, 23rd July 1907," Johnstone and Linton.
F. rubra, genuina, barbata Hack. *F. rubra, dumetorum* mihi.
"Ledbury, 8th July 1907," Bickham.
F. rubra, fallax Hack.
"Near Moffat, Dumfries, 16th July 1907," Linton.
F. rubra, genuina, vulgaris, approaching *fallax* in its root and *grandiflora* in its spikelet characters.
"*F. heterophylla*, Oxford, June 1907," Druce.
I agree, also with that from Berks.

1909, 482. "*F. heterophylla*, near Peebles, August 1909," Druce. Correct.

1910, 607. "Coleman Road, Leicester, 19th August 1910," Horwood.
F. rubra, genuina, vulgaris Hack.

1911, 141. All correctly named.

1912, 297. I agree with Hackel's naming of all except that from "St Osyth, 13th June 1912," Brown. Hackel must have had a glabrous specimen. There is some true *arenaria* in the gathering, and the glabrous forms are no doubt *arenaria*, forma *glabra*, and not *grandiflora*.

1913, 513. All seen and named by Hackel.

1914, 174. "*F. dumetorum*, forma *planifolia* Hack., Skegness, Lincs, July 1911," Druce.
This is important as being the type gathering for this particular form of the plant which I regard as *Festuca juncifolia* St Am.

1915, 387. "Railway banks, Walton Junction, 9th June 1915," Wheldon.
F. rubra, genuina, sub-var. *vulgaris* Hack.
"Marram grass belt, dunes near Hall Road, Lancs, 1st July 1915," Wheldon.
F. rubra, genuina, sub-var. *grandiflora* Hack.
"Dry bank, Torquay, 23rd May, 1915," Robinson.
F. rubra, genuina, sub-var. *vulgaris* Hack., not *fallax*.
"Sand dunes, Hightown, Lancs, 1st July 1915," Wheldon.

F. rubra, genuina, and approaching sub-var. *arenaria*. The gathering is mixed, the spikelets passing from glabrous to hairy in different panicles.

“ Dunes, Ainsdale, Lancs, 4th July 1915,” Wheldon.

F. rubra, genuina, and approaching sub-var. *juncea* Hack.

“ Lutterworth, Leicester, 4th June 1909,” Horwood.

F. rubra, genuina, sub-var. *vulgaris* Hack., not *fallax*.

“ Milford-on-Sea, Hants, May 1915,” Cosmo Melvill. Correctly named.

1917, 259. I have not seen any of the gatherings under the labels—*F. rubra* L., var. *fallax* Hack., Wade, or *F. rubra* L., var., Cosmo Melvill.

1918, 532. “ Douglas, Isle of Man, June 1918,” Holt, Bailey.

F. ovina, vulgaris, sub-var. *hispidula* Hack.

1919, 847. “ *F. ovina* L. (378). Arthog, Merioneth, 14th June 1915,” Barton. I have not seen these two forms but suggest that they are normal *F. ovina*, and the sub-var. *hispidula* Hack. I have no records of *F. capillata* or of its var. *hirtula* from this district.

“ *F. ovina* L., var. ? Inchnadamph, July 1919,” Druce.

Is this the same plant as was distributed in 1907, p. 322?

“ *F. tenuifolia* Sm. Milford-on-Sea, June 1919,” Melvill.

See my remarks on this plant under 1887, p. 194.

“ Coast sands, St Osyth, N. Essex, 29th May 1919,” Brown.

See under 1912, p. 297, but I should place this gathering under *F. rubra, genuina, vulgaris*, with some of the plants showing a tendency towards sub-var. *glaucescens*.

“ Sandhills between Aberdovey and Towyn, Merioneth, 25th May 1919,” Melvill.

F. rubra, genuina, sub-var. *vulgaris* Hack.

“ Sutton Heath, Northamptonshire, 15th June 1915,” Horwood.

The specimens I have seen have glabrous spikelets and thus come under *F. rubra, genuina*, sub-var. *vulgaris* Hack.

1919, Pt. V., p. 690. “ *F. rubra* L., var. *pruinosa* Hack., Newport, Pembroke,” Druce.

The specimen I have examined I should place under *F. rubra, genuina*, sub-var. *vulgaris*.

“ *F ovina* L., var. *vivipara*. On Carnedd Llewellyn.”

Not var., but forma; the true var. *vivipara* is under *F. supina*.

1923, 412. “ Borth, Glam., 23rd June 1923,” Cumming.

F. rubra, genuina, sub-var. *arenaria* Hack.

1924 and onwards. I have given my opinion in the *Reports*.

CORRECTIONS.

In the *Reports* for 1918, vol. v., pt. ii., p. 409; 1924, vol. vii., pt. iv., p. 746, and 1925 vol. vii., pt. vi., p. 1071, read the generic name

Puccinellia as the correct spelling in each case. I had made this alteration in my note of 1925, but unfortunately the printer introduced a rendering of his own, thus coining another misnomer. Those who have sheets will realise that the 1925 label repeated the mistake of that of 1924, where I raised the question of the correct spelling. This I attempted to supply in my 1925 note, with unfortunate consequences.

ON *POA SUBCAERULEA* SM. AND ITS RESTORATION.

By C. A. M. **Lindman**, Stockholm.

When J. E. Smith discovered this plant, "The Blueish Meadow-grass," he published it in his *English Botany*, vol. 14, t. 1004 (1802). Although this picture is not one of the best in his grand work, it serves excellently to explain the long accompanying description; and by this publication of a new species, the author gave a most valuable addition to the genus *Poa*.

The Linnean species of *Poa* in Europe were, at that time, not accurately characterised and distinguished. (Smith recognises for instance his new species in *Poa alpina* Huds., not L., and *P. glauca* With., not Fl. Dan.) Nevertheless he is perfectly successful in pointing out how to distinguish *P. subcaerulea* from the earlier species, especially *Poa pratensis*, laying stress upon the following marks (*Eng. Bot.*, t. 1004):—

"Whole plant glaucous" and "a blueish appearance" (Smith here evidently means a distinct pruina).

"Panicle shaped like that of *alpina*," viz., more crowded, with thicker and broader spikelets, more or less clustered together.

"Calyx almost awned," the glumes really being more cuspidate than in *pratensis*. As seen in the drawing, the branchlets of the panicle are very few and nearly erect instead of standing straight out.

There are specimens (3 individuals) of this species in the Ricks Museum (Herb. Stockholm), sent by Smith to Professor O. Swartz, in Stockholm. Although not so typical as later specimens, both from England and Sweden, they are quite recognisable. There is likewise a specimen in J. E. Smith's herbarium in the Linnean Society, London.

Unfortunately, Smith did not long maintain his new plant. In his *Compendium Fl. Brit.*, 1816, he published a new species, *Poa humilis* Ehrh. (this name, however, is a *nomen nudum*) and transferred *P. subcaerulea* to it as a mere synonym. In this way he in reality spoiled *P. subcaerulea* as a proper species, for in his description of the new *P. humilis* two species are mixed together. The fact is, that Ehrhart's *humilis* (*nom. nudum*), according to his original specimens, is a different plant from Smith's original *P. subcaerulea*. (I have given the name *Poa irrigata* to Ehrhart's *P. humilis* in *Botan. Notiser* 1905, and published an account of its differences from *P. subcaerulea* in *Botan. Notiser* 1926, p. 273.)

Nevertheless, *Poa subcaerulea* still exists in British Literature, but usually only as a variety of *P. pratensis*. The English authors seem to have underestimated it, probably because its variations in some cases make its peculiarities less striking, and there are also no doubt several hybrids of it with allied forms of *Poa*.

I devoted a closer study to Smith's *P. subcaerulea* during my attempts to make out the Danish plant, called *Poa costata*, drawn in *Flora Danica*, t. 2402, but not agreeing with the original *Poa costata* Schumacher. In Scandinavian handbooks it generally is inserted as a variety of *Poa pratensis* (*sensu latissimo*), but without any decisive marks, and it is often called an uncertain or " mystical " plant. This *Poa costata*, Fl. Dan., has been plentifully collected by Danish botanists, chiefly in Sjalland, so that there is no difficulty in getting true specimens of it in great number. After making a circumstantial description of this plant, and comparing it with the painting in *Fl. Danica*, I found that *Poa costata* is a proper species and identical with *P. subcaerulea* Sm. The name " costata " is later, and must moreover fall for the reason that the original specimens of Professor Schumacher's *Poa costata* which I had the advantage of having lent me from the Botanical Museum in Copenhagen, are quite different from the *P. costata* of *Fl. Danica* and later Danish authors.[†]

In this way I am able to state positively that the true *Poa subcaerulea* Sm. is also a Swedish species and not rare in southern Sweden, at least so far as Stockholm (about 60 degs. north lattitude). In several parts it grows abundantly, particularly in woody meadows, or at the edges of groves and forests, generally on shady and sheltered places, more dry than moist. It differs at the first glance from other *Poa* forms in the greyish or whitish hue of the panicle, in the apex of the culm, in the sheaths and the outside of the blades and, furthermore, in the narrow and rhombic circumference of the panicle, its lower branches being very few, usually only in pairs, and not standing horizontally but more or less erect. I have also found that the spikelets are thicker than in *P. pratensis*, the transverse section being broadly elliptical. The subterranean branches of the stem are long, rather coarse, and loosely running in the soft leaf-mould, and the basal shoots are not densely tufted with the culm. It is characteristic of this species that the culm mostly has three fresh, green leaves, the blades of which are comparatively short, broad, and flat, not complicated, the uppermost close to the panicle, and the lowest one spreading out or rather recurved.

[†] Schumacher's original specimens are teratological plants of *P. angustifolia* (?), the flowers of which were destroyed by parasitic animals (*Anguillulides* ?), so that the whole panicle got abnormal, with the shape of a narrow spike, the spikelets being sessile, and the valvules wrinkled with prominent ridges at the veins, which evidently gave rise to the name *costata*. On the normal *costata* in *Fl. Danica*, this name seems rather to allude to the distinct lateral veins even of the lower glume, while the gluma of *P. pratensis* (*sensu stricto*) and of *P. angustifolia* usually lack the lateral veins.

ADDITIONS TO THE ADVENTIVE FLORA OF THE PORT OF CARDIFF.

By A. E. Wade, F.L.S. and R. L. Smith.

The following is a list of species and localities additional to our contribution to the B.E.C. Report, vol. vii., pp. 999-1027 (1925) and embodies the result of work in the field during 1926.

The very large number of additional species noted is due to the unusual conditions which held last year. The ground over which grain-sifting had been scattered for several years has been partly converted into allotments. The digging over of the ground made it possible for introduced plants to grow much more freely and robustly and, no doubt, many seeds germinated which would not have done so on the comparatively hard surface of the original waste ground. Many long buried seeds were undoubtedly enabled to grow by the disturbance of the ground. The amount of decaying vegetable matter, making the ground really " warm," was responsible for the great luxuriance of the plants and assisted the seeds of such unusual aliens as *Citrullus vulgaris* and *Lagenaria vulgaris* to germinate, both of which flowered.

During early summer *Roemeria hybrida* came up in fair quantity over a small area, but it vanished after a week or so. A single example was found in October by our worthy secretary.

About 180 adventive species were noted at Splott during 1926, 43 of which were new to the Cardiff district.

The following is a list of species new to the Cardiff district. The species recorded from Splott are mostly grain-sifting introductions.

177. **Wilckia maritima** Scop. Mediterranean Region. Splott.

191 (2). **Sisymbrium runcinatum** Lag. Mediterranean Region, Caucasus, Orient. Splott.

229. **Eruca hispida** Cav. Spain. Splott, in fair quantity.

231. **Carrichtera annua** (L). Spain. Splott.

325. **Tunica prolifera** Scop. Europe, Caucasus Region. Splott.

339. **Silene conoidea** L. Europe, Orient. Splott.

350. **S. muscipula** L. Mediterranean Region. Splott, in fair quantity.

375. **Cerastium dichotomum** L. Mediterranean Region, Asia Minor. Splott.

490. **Erodium laciniatum** Willd. Mediterranean Region, Persia. Splott.

491. **E. malacoides** Willd. Mediterranean Region, Orient. Splott.

530 (2). **Lupinus hirsutus** L. Mediterranean Region. Splott. A number of plants appeared but only one flowered.

577. **Medicago rigidula** Desv. Europe. Splott.

649 (6). **Lotus conimbricensis** Brot. Mediterranean Region. Splott.

664. Scorpiurus sulcata L. Mediterannean Region. Splott.

657. Astragalus baeticus L. Spain and Sicily. Splott. Abundant in 1926.

690 (2). Vicia vestita Boiss. Chile. Mediterranean Region. Splott.

701. V. peregrina L. Mediterranean Region, Orient, North and Western India. Splott, Grangetown.

1074 (2). Lagenaria vulgaris DC. Tropical Regions. Splott. Flowered but did not fruit.

1074 (3). Citrullus vulgaris Schad. Tropical Africa. Splott. Flowered but did not fruit.

1210. Asperula arvensis L. Europe, Orient. Splott.

1291 (2). Ambrosia psilostachya DC. North America. Barry.

1308. Coreopsis tinctoria Nutt. North America. Splott.

1410. Calendula officinalis L. S. Europe. Splott.

1474 (2). Centaurea salmantica L. North Africa. Splott.

1485. Rhagadiolus edulis Gaertn. Mediterranean Region. Orient. Splott.

1486. R. Hedypnois All. Mediterranean Region. Splott.

1661. Tragopogon crocifolius L. S. Europe. Splott.

1835. Convolvulus tricolor L. S. Europe. Splott.

1874. Linaria triphylla Mill. Mediterranean Region. Splott.

1890b. Antirrhinum Orontium L., var. grandiflorum Chav. Splott.

2020. Salvia aethiopis L. S. Europe, Orient. Canton.

2123. Chenopodium opulifolium Schrad., var. microphyllum. Splott.

2130 (2). C. incisum Poir. Central America. Splott.

2133. C. capitatum Asch. Northern and Southern Regions. Splott.

2210 (4). Rumex magellanicus Gris. S. America. Cardiff, G. C. Druce.

2639b. Setaria viridis Beauv., sub-var. Weinmanni R. & F. Splott.

2639c. S. viridis Beauv., var. nana Goiran. Splott.

2736. Lamarkia aurea Moench. Mediterranean Region, Orient. Splott.

2757. Briza minor L. Europe, Orient, N. Asia. Splott.

2807. Bromus commutatus Schrad. Europe, N. Africa. Grangetown, Splott. b. pubescens Wats. Splott.

2809. B. arvensis L. Europe. Splott.

2815. B. macrostachys Desf. Mediterranean Region, West, North and Central Asia, N. Africa. Splott. d. lanuginosus (Poir.). Splott.

2837. Triticum triaristatum G. & G. Europe. Splott.

The following are species already recorded for the Cardiff district, but not from the localities under which they are listed.

SPLOTT.

63. *Delphinium Consolida* L. 84. *Papaver hybridum* L. 87. *Argemone mexicana* L. 91. *Roemeria hybrida* DC. 188. *Sisymbrium Irio* L. 217. *Brassica alba* Boiss. 461. *Hibiscus Trionum* L. 529. *Lupinus*

angustifolius L. 550. *Trigonella polycerata* L., var. *pinnatifida*. 554. *T. caerulea* Ser. 575. *Medicago Murex* Willd. 584. *M. ciliaris* Willd. 602. *Trifolium ochroleucon* Huds. 623. *T. tomentosum* L. 632. *T. glomeratum* L. 656. *Astragalus hamosus* L. 667. *Coronilla scorpioides* Koch. 690. *Vicia narbonensis* L. 721. *Lathyrus Cicera* L. 724. *L. Ochrus* DC. 1166. *Caucalis daucoides* L. 1201. *Galium tricorne* Stokes. 1411. *Calendula arvensis* L. 1742. *Anagallis femina* Mill. 1789 (5). *Benthamia intermedia* Fisch. & Mey. 1810. *Asperugo procumbens* L. 2059. *Stachys annua* L. 2088. *Plantago Psyllium* L. 2390. *Asphodelus fistulosus* L. 2650. *Phalaris aquatica* L. 2074. *Lagurus ovatus* L. 2747. *Eragrostis cilianensis* V.-L. 2794. *Bromus rigens* L. 2799. *B. rubens* L. 2836. *Triticum ovatum* Rasp. 2838. *T. triunciale* L.

CARDIFF DOCKS.

651. *Galega officinalis* L. 1771. *Gilia capitata* Sims.

GRANGETOWN.

1463. *Centaurea melitensis* L. 2017. *Melissa officinalis* L.

BARRY.

2112. *Amarantus albus* L.

NATURE'S WAY FOR PRODUCING SPECIES. NATURE'S SCHEMING.

By E. Almquist.

In a letter to Nageli in 1873 Mendel suggests the following case:—By change of the environment a Hieracium produces hybrids; the original form disappears and some hybrid thrives. The same is repeated by new changes and a third form survives. This example really illustrates the way of building the flora.

The causality rules everywhere. We must leave the thought a priori that Nature breeds new forms in order to make them suitable for an environment. The crosses produce innumerable different hybrids, all combinations of the genes come out. Only the form that is fit for the place survives, all the others disappear. For the crosses all tendency is quite excluded. Perhaps the mutation also forms its varieties blindly. The hereditary mutations are not studied enough. We know the flos luxurians that appears ab alimento luxuriante, often in our cultures. The flowers become replete, important organs disappear at the same time. Among the mutants we find apetalous, pelorias, morbid monstrosities, etc., and often the variation is insignificant. With poor nutrition some pathogenic bacteria lose some genes and breed new constant forms (Fur Artbildung in der freien Natur. *Acta Horti Berg.* ix., 65, 1926). We know that many mutants are unable to persist. As far as we know no form is created in order to be suitable for its environment. Thus both hybrids and mutants seem to agree. The habitat type represents scarcely a genotypical response to the habitat. Lamarck suggested that the organs are changed by uses or non-uses. In this way varieties and the instinct may be trained. but not new genes won.

Species seem to be bred without Nature's tendency, but on the other side we are able to discover the scheme for the permanence of the life. In the favourable environment most forms tend to constancy. Then the production of less valuable forms is stopped. Another sample of scheming:—When the nutriment is finishing the fructification sets often in both for higher plants and bacteria. Then the seeds are able to find new and better environment. Also the circulation is of great importance for vegetation both in agriculture and in free nature. I have studied it in Siberia, especially on the Island of Bering. When the vegetation of Empetrum had reached the height of half a metre moss and lichens commence to luxuriate. They destroyed the Empetrum in a short time, the body turning quite naked. Then the same commences anew, first a thin layer of moss and lichens, shortly followed by the Empetrum ("Lichenenvegetation di Beriaqsmaeres," *Vegaexpedition Bot.* iv., p. 529).

Science studies only the causality, how often an impulse, a change, set up the consequences. Plants produce an immense number of seeds and we observe the same forms growing everywhere in favourable localities. They are able to breed very different varieties, and we find new forms growing in the changed environment. The causality rules, but at the same time we are able to observe that it is well planned for organisms and the life. They thrive and fill up the earth. The Bacteria lose in starving cultures some genes, but the life survives although very reduced. Everywhere we are able to observe some plain advantages for the life.

In free nature existing plants fit in with their environment. All new forms that do not agree with their environment disappear.

BOTANISING IN THE HIGH TATRA.

By C. D. Chase, M.C., M.A.

Probably for every thousand British tourists to Switzerland and the Tyrol not one visits the High Tatra region of the Carpathians in Slovakia. Twelve hours from Prague it is easily accessible; the hotels are excellent and the people, both Slovaks and Germans, most friendly. The present writer, with the Rev. G. H. Harris, spent the first three weeks of August 1926 partly at Strbské Pleso and partly at Lomnitza. The High Tatra, which rises to some 8500 feet, is mostly granite, but the eastern portion, easily reached from Lomnitza, is limestone—the Beler Kalkalpen. The demarcation between the two formations is clearly marked, and it was very interesting to pass in a few steps from the flora of the granite to that, much more varied, of the Kalkalpen. We were fortunate in meeting Herr Vladimir Krajina, assistant to Professor Domin of the Prague Botanical Gardens. Herr Krajina was collecting plants for a garden of local alpines at Strbské, and he was good enough to name the plants which puzzled me, and also to give me a list of the more striking alpines found in the Beler Kalkalpen. Most of these I was fortunate enough to find though some, owing to the lateness of our visit, were out of flower. The following list is compiled partly from Herr Krajina's and partly from my own lists of daily gatherings. In the three weeks our visit lasted I noted about 450 plants in the Hohe Tatra, which contains (Herr Krajina is again the source of my information) about 1200 species of the 3000 known in the new country of Czechoslovakia. There is, unfortunately, no published Flora of the High Tatra, a deficiency, I told Krajina, I hoped he would some day make good. Meanwhile I hope the following list may be of use to some British field botanist who penetrates to this very interesting corner of Europe.

SOME PLANTS GROWING IN THE BELER KALKALPEN.

Clematis alpina, *Ranunculus montanus*, *R. Thora*, var. *carpaticus*, *R. alpestris*, *R. rutaefolius*, *Delphinium elatum*, *D. oxysepalum*, *Petrocallis pyrenaica*, *Hutchinsia alpina*, *Cochlearia Tatrae*. *Kernera saxatilis*, *Arabis sudetica* Tausch, *A. arenosa*, *A. Halleri*. *A. Tatrae*, *A. alpina*, *A. Jacquinii* Beck., *Draba tomentosa* Wahl., *D. aizoides*, *D. nemorosa*, *Viola sudetica* Willd., *V. alpina*, *Polygala amara*, *Silene acaulis*, *Gypsophila repens*, *Dianthus glacialis*, *D. speciosus*, *D. praecox*, *Sagina Linnaei*, *Arenaria laricifolia*, *A. sedoides*, *A. verna*, *A. muscosa*, *A. ciliata*, *Cerastium alpinum*, *C. lanatum*, *C. latifolium*, *Linum extra-axillare*, *Astragalus alpinus*, *A. oroboides*, *A. australis*, *Oxytropus sericea*, *O. carpatica*, *O. campestris*, *Hedysarum obscurum*, *Anthyllis alpestris*, *Onobrychis alpina*, *Potentilla alpestris* Hall., *Dryas octopetala*, *Cotoneaster tomentosa* Lindl., *C. vulgaris* Lindl., *Helianthemum alpestre*, *H. grandiflorum*, *Parnassia palustris*, *Sedum alpestre*, *S. atratrum*, *S. carpaticum*, *S. Rhodiola*, *Saxifraga Aizoon*, *S. aizoides*, *S. Bellardi* All., *S. androsacea*, *S. perdurans*, *S. oppositifolia*, *S. caesia*, *Bupleurum ranunculoides*, *B. longifolium*, *Scabiosa lucida*, *Erigeron neglectus*, *E. uniflorus*, *E. carpaticus*, *Aster alpinus*, *Bellidiastrum Michelii*, *Artemisia petrosa*, *Senecio capitatus* Wahl., *S. crispatus*, *Carduus glaucus* Baum., *Saussurea alpina*, *S. macrophylla*, *S. pygmaea* Jacq., *S. discolor* Willd., *Leontopodium alpinum*, *Leontodon incanus* Schrk., *L. tatricus*, *Phyteuma orbiculare*, *Campanula pusilla*, *C. Scheuchzeri*, *Pinguicula alpina*, *P. vulgaris*, *Androsace lactea*, *A. chamaejasme* Wulf., *Primula Auricula*, *P. carpatica*, *Cortusa Matthioli*, *Soldanella hungarica*. *Pyrola rotundifolia*, *P. uniflora*, *Gentiana carpatica* Wettst., *Pedicularis Hacquetii* Graf., *Veronica aphylla*, *Euphrasia salisburgensis*, *Thesium alpinum*, *Salix Jacquiniana*, *S. reticulata*, *S. hastata*, *S. nigricans*, *Tofieldia caly-*

culata Wahl., *Lilium Martagon*, *Lloydia serotina*. *Allium sibiricum*. *A. montanum*. *Chamaeorchis alpina*, *Orchis globosa*, *Goodyera repens*, *Corallorrhiza innata*. *Malaxis monophyllos* Sw., *Juncus filiformis*. *Eriophorum Scheuchzeri* Hopp., *Scirpus uniglumis*. *Carex atrofusca* Schk., *C. fuliginosa* Schk., *C. capillaris*, *Phleum Michelii* All., *Sesleria caerulea*. *Trisetum alpestre*. *T. carpaticum*, *Festuca varia*, *F. carpatica*. *Athyrium alpestre*, *Cystopteris regia*, *C. sudetica*, *C. montana*. *Polystichum lobatum*, *P. Braunii*. *Nephrodium Robertianum*, *Asplenium viride*. *Botrychium Lunaria*. *Equisetum hyemale*. *E. variegatum*. *Selaginella selaginoides*.

QU'EST-CE QUE LE *SOLANUM DILLENII* SCHULTES?

PAR M. A. THELLUNG (ZURICH).

En 1874, T. A. Schultes (*Oesterr. Flora*, ed. 2, i., p. 393) a publié un Solanum Dillenii de la manière suivante :—

" 868. *Dillenius N*[*achtschatten*]. (*S. Dilleni* Nob.).—Die Aeste rund, unbehaart; die Blätter vollkommen ganzrandig, unbehaart. Dillen. Hort. Eltham., t. 275, fig. 355. *S. patulum* * Pers. Syn., S. 224. n. 54, *†. (Da Persoon Syn., S.223. n. 38, noch ein anderes *S. patulum* aus der *Fl. Peruv.* aufführt, so nannte ich dieses nach seinem ersten Beschreiber, dem unsterblichen Dillenius. Hr. Prof. Kitaibel fand das examplar, das ich vor mir habe, in den Wäldern der Matra; die eyförmigen Blätter stehen horizontal ab; die viel kleineren Blumen entspringen mit mehr fadenförmigen Blumen-stielen weiter von den Gelenken entfernt, und sind armblüthiger; die afterdolden mit ihren Früchten aufrecht abstehend.)"

On voit tout de suite que l'espèce de Schultes est un mélange, composé de deux éléments différents : (1) le *Solanum procerius patulum, vulgaris fructu* Dillen. Hort. Eltham. ii., p. 367, t. 275, fig. 355, 1732, devenu plus tard *S. nigrum*, β *patulum* L. Sp. Pl., ed. i., p. 186, 1753; (2) une plante de l'herbier de Kitaibel, différant du type de Dillenius par plusieurs caractères, mis en évidence par Schultes même, et qui appartient, d'après les investigations récentes de M. S. Polgár (*Bot. Kozlem.* xxiii., pp. 30 seq., 1926), au *S. nodiflorum* Jacq. (cette dernière espèce est bien caractérisées vis-à-vis du *S. nigrum* L. et de la plupart des espèces voisines, par des filaments des étamines glabres). C'est une espèce tropicale de dispersion imparfaitement connue (à cause de confusions fréquentes avec des espèces voisines)[1]; il va sans dire qu'elle ne vient pas dans les bois de la Hongrie, comme le prétend l'étiquette de Kitaibel, mais elle était cultivée dans les jardins botaniques à la fin du xviii. et au commencement du xix. siècle.

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[1] Ainsi le *S. "nodiflorum"* de Wright in *Fl. Trop. Afr.* iv./2, ii., p. 218, 1906, est une espèce collective, englobant, outre le vrai *S. nodiflorum* Jacq., des formes du *S. nigrum* L. à feuilles entières et glabres (= *S. nigrum*, var. *Dillenii* A. Gray Synopt. Fl. N. Am. ii. 1, p. 228, 1878 ? ex descr., excl. syn et le *S. guineense* (L.) Lam. et auct. non L. (espèce different *toto cœlo* du *S. nodiflorum*).

Maintenant, quel est le type du *S. Dillenii* Schultes? Il ressort du texte que c'est la plante de Dillenius (que Schultes n'avait pas vue *in concreto*, mais qu'il juge d'après la description et la planche données par l'auteur), et qu'on peut négliger, pour ce qui concerne la question de nomenclature, la plante de Kitaibel (=*S. nodiflorum* Jacq.). Il convient d'ajouter que Reichenbach a encore mal interprété le *S. Dillenii*, puisqu'il décrit et figure (*Fl. Germ. Excurs.*, sect. 1, p. 391, 1830, et *Ic. Pl. Crit.* x., p. 20, fig. 1285, 1832, sous ce nom, le *S. guineense* (L.) Mill., Lam. et auct. (non L.[1], comme l'a mis en évidence M. Polgár (*l.c.* 1926).

Il faut donc avoir recours à la plante originale de Dillenius. La description et la planche, tout en étant bonnes pour l'époque, sont insuffisantes pour reconnaître l'espèce avec certitude, ce qu'il faut du reste dire de toutes les descriptions des espèces de la section "Morella" antérieures à 1910 environ. En effet, la systématique moderne de ce groupe, inaugurée par l'excellent monographe M. G. Bitter, exige qu'on étudie et indique avec soin, pour chaque espèce, à part les caractères macroscopiques, l'indument des parties végétatives (étudié au microscope), la longueur et l'indument des filaments des étamines et du style et surtout les grains sclérenchymatiques du péricarpe[1], dont la présence ou absence, le nombre et les dimensions sont très caractéristiques pour l'espèce. M. le Dr G. C. Druce à Oxford, avec son obligeance habituelle, a bien voulu me confier le précieux original du *Sol. procerius patulum* Dill., pour une étude approfondie. Il en résulte la description détaillée suivante:

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[1] *S. guineense* (L.) Miller Gard. Dict., ed. 8, nr. 7, 1768 (saltem ex syn. Boerh.) ! ! (nomen neglectum) et Dict. Jard. vii., p. 131, nr. 7, 1785; Lam. Illustr. ii., p. 18, 1793, non Linn. Spec. Pl., ed. 1, p. 184, 1753 (species Capensis admissa: syn. *S. guiennense* (*sphalm.*) Hill Veg. Syst. ix., p. 34, 1765 (cum ic. valde dubiosa !) *S. laurinum* Burm. fil., Fl. Cap. Prodr. p. 5, 1768 (sine descr., cum cit. fig. *Commelyni*) teste Bitter in *Fedde Repert.* spec. nov. xvi., No. 25 30, p. 407, 1920: *Atropa solanacea* L. Mant. ii., p. 205, 1771; *A. viscosa* Hort., ex Bitter, *l.c.*; *Sol. aggregatum* Jacq. Coll. iv., p. 124, 1790, et Ic. Plant. Rar. ii., p. 10, tab. 323, 1786-93. Le *S. guineense* (L.) Mill. et auct. rec. (syn.: *S. nigrum*, *S. guineense* Linn. Spec. Pl., ed. 1, p. 186, 1753; *S. guiennense* (*sphalm.*) Chazelles in *Mill. Dict. Jard.* vii., p. 124, nr. 7, 1785) ne peut donc garder son nom traditionnel pour cause d'homonymie: ne connaissant pas de dénomination valable pour cette espèce, je propose pour elle le nom de *S. Boerhaavii* Thell. nom nov. C'est une espèce des jardins botaniques, dont l'origine n'est pas connue avec certitude (elle ne vient sûrement pas das la Guinée, comme le ferait penser son nom botanique: M. Bitter (in *Engl. Bot. Jahrb.* xlix., p. 561, 1913, et *in litt.*) qui a élevé la plante de graines provenant des Indes occidentales (Isla de Pinos au Sud de Cuba), pense qu'elle pourrait être spontanée). Elle fut d'abord mentionnée par Boerhaave (Ind. Alt. Pl. Hort. Lugd. Batav. ii., p. 68, nr. xvii., 1720, 1727, sous le nom de *Solanum guineense*, fructu magno, instar Cerasi nigerrimo, et décrite et figurée ensuite par Dillenius (*Hort. Eltham.* ii., p. 366, et tab. 274, fig. 354, 1732) sous cette même désignation. D'autres synonymes certains de cette espèce sont, comme nous venons de constater: *S. Dillenii* Rchb. Fl. Germ. Excurs. sect. i., p. 391, 1830 (excl. syn. Dill.) et Ic. Pl. Crit. x., p. 20, fig. 1285, 1832) non Schultes: *S. nodiflorum* C. H. Wright in Thiselton-Dyer *Fl. Trop. Afr.* iv. 2, p. 218, 1906, pr. p., non Jacq. Le *S. scabrum* Mill. Gard. Dict., ed. 8, nr. 6, 1768, que Dunal in DC. *Prodr.* xiii./1, p. 49, 1852, donne (sur la foi d'échantillons de l'herbier Banks) comme synonyme du *S. guineense* Lam., correspond en réalité, quant au synonyme Dill. fig. 356 (= *S. nigrum* ϵ *virginicum* L.), au *S. pterocaulon* Dun. Dunal cite en outre, comme synonyme du *S. guineense*, le *S. tenuiflorum* Steudel Nom. Bot., ed. 2, ii., p. 606, 1841 (fondé sur le *S. nigrum* Vell. Fl. Flum. ii., tab. 109, 1827, 1835, non L.; sur la foi de Sendtner, qui rapporte la planche de Vellozo à son *S. nigrum* γ *angulosum* in Mart *Fl. Brazil* fasc. 6, Solan., p. 16, 1846): mais il parait tres improbable que cette plante brésilienne corresponde réellement au *S. guineense* auct., comme l'admet Dunal.

Solanum Dillenii Schultes (=*S. nigrum β patulum* L. = *S.* * *patulum* Pers. Encheir. i., p. 224, nr. 54, 1805 (nec p. 223, nr. 38, species peruviana admissa), vix (vel pro minima parte tantum Roth 1800[2], descr. emend. ex specimine authentico in herb. Dilleniano conservato: Planta herbacea annua (ex Dill.); de habitu confer descriptionem et iconem Dillenii. Ramus in herbario asservatus 30 cm. longus (ramulis secundariis auctus), basi 3 mm. crassus, exsiccatione anguloso-sulcatus, leviter alato-lineatus (lineis in statu sicco vix perspicuis) leviter puberulus (setulis minutis vix 1-4 mm. longis 3-cellularibus acutis sursum curvatis). Folia anguste ovata utrinque acuminata, limbo ad 10 cm. longo et 4 cm. lato, in petiolum alatum 1-2 cm. longum contracta, integerrima, superne brunneo-viridia, inferne pallidiora, in utraque facie et margine sparse puberula (pilis eis caulis similibus). Inflorescentiae extraaxillares umbelliformes, pauci (3-5) florae, pedunculo satis robusto tereti puberulo pedicellis longiore (!)[1] (2-3 cm. longo). Pedicelli puberuli, floriferi circ. 4 mm. longi, fructiferi patuli ad 8 mm. longi sursum versus sensim incrassati (apice 3.4-7.8 mm. crassi). Calyx florifere parvus (1½ mm. longus), setulis minutis sursum adpressis puberulus, dentibus triangulari-ovatis minutis acutiusculis tubo subduplo brevioribus; fructifer auctus, 2½ mm. longus, dentibus triangularibus acutiusculis 2 mm. longis et basi fere totidem latis. Corolla satis parva, 5 mm. longa[2], extus minute setuloso-puberula. Antherae oblongae, 1.75 mm. longae; filamenta multo breviora, dense villosa pilis circ. 6-cellularibus. Pollinis granula 0.022-0.023 mm. longa, 0.018 mm. lata. Stylus antheras vix superans, apice geniculato-curvatus ad medium usque breviter villosus pilis elongatis (circ. 4-cellularibus, ± ½ diametri styli attingentibus) horizontalibus, acutis, medium styli versus decrescentibus; stigma depresso-globosum. Bacca globosa, ex cl. Dill. demum nigra, 7-8 mm. diam.; semina valde numerosa, circ. 1½ mm. longa; granula sclerenchymatica 10-11, sphaeroidea vel late ellipsoidea, ½-(fere) 1 mm. longa.

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[1] Bitter, G. Steinzellkonkretionen im Fruchtfleisch beerentragender Solanaceen und deren systematische Bedeutung. Engl. Bot. Jahrb. xlv., H. 4, pp. 483-507 1911. Id., Weitere Untersuchungen uber das Vorkommen von Steinzellkonkretionen im Fruchtfleisch beerentragender Solanaceen. Abh. Naturwiss Ver. Bremen xxiii., 1, pp. 114-163, 1914.

[2] *S. patulum* Roth Catal. Bot. ii., p. 23, 1800. L'auteur, tout en citant *S. nigrum β patulum* L. et Dill., fig. 355, donne de son espèce une description nouvelle et détaillée, qui ne s'applique pas mal, en général, il est vrai, au *S. Dillenii*; toutefois les points suivants de la diagnose font douter de l'identité des deux plantes et semblent indiquer que Roth a eu sous les yeux plutôt le *S. nodiflorum* Jacq., souvent cultivé à cette époque là (malheureusement la diagnose reste muette sur des caractères essentiels tels que l'indument des filaments): " Caulis teres glaberrimus . . . nodis oblongis subincrassatis . . . folia . . . glaberrima . . . Cymi . . . infra dichotomias e caule ramisque egredientes (chez le *S. nodiflorum*, les pédoncules naissent peu au-dessous des nœuds, chez le *S. Dillenii*, par contre, peu au dessus du milieu des entrenœuds—Th.) . . . Pedunculi glabri . . . Pedicelli . . . filiformes, floriferi decurvi, fructiferi adscendentes . . . Flores exigui . . . Calyx perexiguus . . . laciniis ovalibus obtusissimis . . . Corolla duo, raro tres lineas in diametro habens." J'hésite toutefois à identifier l'espèce de Roth directement avec le *S. nodiflorum* Jacq., 1788, les caractères suivants ne s'appliquant pas bien à l'espèce de Jacquin: " Folia . . . obtusa . . . Pedunculi . . . sesqui-ad biunciales . . . Baccae erecto-patulae, magnitudine baccarum Rhamni Franculae (sic) ante maturitatem punctis exiguis albis adspersae, in disco macula nigra notatae." Le fruits du Frangula Alnus ont un diamètre de 8 mm. environ, tandis que les baies du *Sol. nodiflorum* sont ordinairement plus petites. Si la ponctuation du fruit avant la maturité devait indiquer des granules sclérenchymatiques, il ne saurait s'agir du *S. nodiflorum*, dont les baies sont dépourvues de ces granules d'après M. Bitter (Abh. Naturw. Ver. Bremen xxiii., 1, p. 138, 1914). Plus tard, comme me le fait remarquer M. Polgár (*in litt.*), Bernhardi a également assimilé à tort la plante de Dillenius au *S. nodiflorum*, puisqu'il donne (Ueber den Begriff des Pflanzenant p. 51, 1837, comme synonymes de cette dernière espèce: *S. scabrum* Mill.?, *S. Dillenii* Schultes, *S. strictum* Zucc., *S. patulum* Pers. n. 54 *β* et *S. nigrum patulum* L.

Ni le texte de Dillenius ni l'étiquette de son herbier ne donnant de renseignement sur la provenance de l'échantillon original, il faut tâcher d'identifier la plante uniquement par la voie de la comparaison morphologique. M. le Dr S. Polgár à Györ (Hongrie), que je remercie à cette occasion bien sincèrement de son aimable concours, me fait remarquer que parmi toutes les espèces publiées de la section Morella, le *S. nigrescens* Mart. et. Gal. (En. Syn. Pl. Phan. Galeotti Mex. in *Bull. Acad. Brux.* xii., p. 140, 1845; Schlechtend. Pl. Leib. in *Linnaea* xix., p. 300, n. 69, 1847, est la plus voisine de la plante de Dillenius, surtout par la configuration des granules sclérenchymatiques qui sont au nombre de 11 par baie dans un échantillon authentique de l'herbier du Musée d'Histoire naturelle de Vienne, d'après M. Bitter (in *Abh. Naturw. Ver. Bremen* xxiii., p. 139, 1914). Dunal (in DC. *Prodr.* xiii. 1, p. 49, nr. 53, 1852) caractérise cette espèce comme suit: "Caule herbaceo glabriusculo, foliis solitariis geminis inaequalibus longe petiolatis ovato-lanceolatis integerrimis utrinque attenuatis pubescenti-pilosis, pedunculis lateralibus pubescentibus umbelliferis floribus parvis reflexis, calyx parvulo 5-fido, laciniis ovatis. 1. Ad ripas rivulorum jugi Mexicani Taveziae (Gal. n. 1238)[3]. Folia 1-2 pollicaria. Pedunculis pollicares, pedicellis majores. Corolla 5-partita, ¼-pollicaris. Bacca sphaerica, nigrescens. Affine ex cb. auct. *S. nigro* L. sed foliis angustioribus longius petiolatis diversum." On voit que cette description concorde assez bien

[1] In icone Dilleniana pedunculus inaccurate pedicellis subaequilongus delineatus est.

[2] De forma corolla, in specimine herbarii pessime conservatae, nihil certi dici potest; sed confer iconem Dillenianam, ubi corolla 8 mm. diam., laciniis triangulari-ovatis 3 : 2-2½ mm.

[3] Hemsley (Brot. Centr. Am. Bot. ii., p. 411, 1882, indique: Cordillera of Oaxaca, 7000 feet.

avec celle du *S. Dillenii*. Le fait que les feuilles de cette dernière espèce sont notablement plus grandes et plus glabres,[1] s'explique probablement par l'effet de la culture. Mais n'étant pas renseigné sur les caractères floraux (étamines et style) du *S. nigrescens*, je n'ose pas, pour le moment, réunir les deux espèces.

Il résulte de cette étude que le *Solanum procerius patulum* Dill. (= *S. nigrum β patulum* L. = *S. patulum* Pers. nr. 54, 1805 (vix Roth 1800, nec R. P., ex Pers., nr. 38, 1805), = *S. Dillenii* Schultes) est spécifiquement distinct du *S. nigrum* L., surtout par la présence de 10 à 11 granules sclérenchymatiques par baie. Il partage ce caractère avec l'espèce mexicaine. *S. nigrescens* Mart. et Gal., dont la plante de Dillenius pourrait bien être une forme culturale.

Pour être complet, il convient d'ajouter que l'herbier de Dillenius contient, sous le même nom dillénien, encore deux échantillons, provenant de l'herbier Sherard et que M. le Dr Druce, a également bien voulu me communiquer pour l'étude (ils possèdent tous les deux, comme le *S. Dillenii*, les feuilles à bords ± entiers et glabrescents et les filaments des étamines, et les styles dans leur moitié inférieure densément poilus :

1. "441. *Solanum procerius patulum, vulgaris fructu Hort. Elth.*- Chelsea, from Barbados fields." Feuilles, frappament petites (atteignant jusqu'à 4 : 2½ cm.). Caractères floraux du *S. Dillenii* (anthères longues de presque 2 mm.), mais inflorescences ordinairement 7-flores. Baies plus petites (jusqu'à 6½ mm. de diamètre) ; granules sclérenchymatiques ± 4, de 0.3-0.4 mm. de diamètre. Cette plante, cultivée à Chelsea près Londres et provenant sans doute, comme l'indique l'étiquette, des Indes Occidentales, correspond parfaitement à la plante de cette région décrite par M. O. E. Schulz (in Urban *Symbolae Antillanae* vi., 1, p. 160, 1909, comme *S. nigrum*, γ *americanum* (Mill. pro. spec.). Je ne connais pas de dénomination sûre pour cette plante ; il me paraît peu probable que ce soit le vrai *S. americanum* Mill. (de l'Amérique du Nord). Il faut probablement chercher le nom valable parmi les especes suivantes, citées par M. O. E. Schultz (*l.c.*, pp. 161-2) en synonymie de son *S. nigrum*, var. *americanum* : *S. strictum* Zucc., 1809, *S. oleraceum* L. C. Rich. ap. Dunal in Poiret 1813. *S. Desvauxii* Hamilt., 1825, *S. caribaeum* Dunal 1852 ; mais toutes les descriptions étant insuffisantes au point de vue de la systématique moderne, il est impossible de rien décider sans une étude soigneuse des échantillons originaux. Il convient d'ajouter que le *S. nigrum*, var. *americanum* O. E. Schulz se compose comme le fait remarquer M. Bitter (in Engler's *Bot. Jahrb.* xliv., pp. 490-1, 1911, de deux entités (espèces) différentes, l'une munie, l'autre dépourvue de granules sclérenchymatiques dans le péricarpe.

2. "442. *Solanum procerius patulum vulgaris fructu.—Sol. Indicum vulgari simile sed procerius floribus albis parvis Pl* (*uk.*). *Almq* (a.)., 349." Feuilles plus petites que chez le *S. Dillenii* (atteignant jusqu'à 6 : 4½ cm.), relativement plus larges. Inflorescences 4-5 flores Fleurs petites (longues de 4 mm. environ). Anthères plus courtes

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[1] Celles du *S. nigrescens* sont assez fortement poilues (Bitter *in litt.*).

que chez les deux autres plantes (longues de 1 à 1.25 mm.) et relativement plus larges. Filaments relativement plus longs (égalant presque l'anthère). Baies de 7 à 8 mm. de diamètre; granules sclérenchymatiques au nombre de 5, de 0.3 à 0.6 mm. de diamètre. Cette plante peut, à la rigueur, rentrer également dans le *S. nigrum*, var. *americanum* (sensu lato); elle diffère du *S. nodiflorum* par les filaments poilus et par les granules du péricarpe.

NOTES ON THE DISTRIBUTION OF PANSIES IN ENGLAND AND WALES.

By Eric Drabble.

The Editor has asked me to give some account of the distribution of the British pansies. In the present communication no attempt is made to furnish more than a list of localities in England and Wales from which I have examined specimens during the last few years. Many collectors have sent me plants to be named and, in accordance with the Editor's desire, the name of the collector has in most cases been entered in the list, but it must clearly be understood that *I alone am responsible for the identifications.*

In collaboration with my friend, Dr Alfred Brammall, lecturer in Geology at the Imperial College of Science, an investigation is being conducted into the distribution of the pansies on the various geological formations. It is hoped that this may be ready for publication towards the end of this year. A more detailed examination of the nature of the soils in which the different species grow is in progress, but this will necessarily occupy some considerable time, as water relationships, calcium content, pH values, and other factors must be determined.

Errors in the spelling of place-names in the following list must almost inevitably occur. Labels are not always very legibly written—but it would ill become the present writer to pursue this subject! As far as practicable every name has been checked by reference to Newnes' Gazetteer of the British Isles.

I shall always be glad to examine specimens on condition (1) that whole plants, including the underground parts, be sent, (2) that sufficient material be furnished to allow me to keep a representative specimen for reference and further study. Notes on habitat and nature of the soil would be useful.

The Scottish and Irish pansies are still under investigation. More gatherings would be welcome, but collectors from these countries must not look for a prompt reply.

For excellent and very useful material I am particularly grateful to Dr Druce, Mr J. E. Little, the Rev. H. J. Riddelsdell and Mr W. H. Pearsall.

CORNWALL (1, 2).

V. agrestis Jord.—Gilly Tresamble (F. H. Davey); Perranarworthal (H. Drabble).

V. Déséglisei Jord.—Lizard (E. Drabble); Saltash.

f. *subtilis* (Jord.)—Truro (E. & H. Drabble).

V. segetalis Jord.—Gilly Tresamble (F. H. Davey); Old Kea, Truro (E. & H. Drabble); Perranarworthal (H. Drabble).

f. *obtusifolia* (Jord.)—Lizard (E. Todd); Mevagissey (F. H. Davey).

V. ruralis Jord.—Saltash.

V. anglica Drabble—Truro (E. & H. Drabble).

V. Lejeunei Jord.—Truro (E. & H. Drabble).

V. variata Jord.—Lizard (E. Drabble); St Just (J. Groves).

V. lutea Huds., f. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—Lands End (W. Curnow); Sennen (F. J. Hanbury).

V. nana DC.—Scilly (W. Curnow).

DEVONSHIRE (3, 4).

V. agrestis Jord.—Stoke Rivers (W. P. Hiern).

V. Déséglisei Jord.—Belstone (W. C. Barton).

f. *subtilis* (Jord.)—Newton St Cyres (W. P. Hiern).

V. segetalis (Jord.)—Chawleigh, Foxworthy, Sherwell (W. P. Hiern).

f. *obtusifolia* (Jord.)—Thorverton (W. P. Hiern); Waddlesdown.

V. arvatica Jord.—Ashburton (C. E. Larter); Belstone (W. C. Barton); Coldridge (W. P. Hiern).

V. contempta Jord.—Crediton Hamlets (W. P. Hiern); Newcot (H. J. Riddelsdell).

V. Lloydii Jord.—Ashburton (E. S. Todd).

V. variata Jord.—South Molton (H. Saunders).

var. *sulphurea* Drabble—South Molton (H. Saunders).

V. lutea Huds., f. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—Braunton Burrows (E. M. Holmes); Instow, Northam (W. P. Hiern).

SOMERSET (5, 6).

V. agrestis Jord.—Failand (I. M. Roper); Bishport, Chipstable, Milton Clevedon, West Monkton (E. S. Marshall).

V. Déséglisei Jord.—Failand (I. M. Roper).

f. *subtilis* (Jord.)—Ashton Gate (I. M. Roper).

V. segetalis Jord.—Compton, Wington (E. S. Marshall).

f. *obtusifolia* (Jord.)—Shipham (I. M. Roper); West Monkton (E. S. Marshall).

V. ruralis Jord.—Wraxall (J. W. White).

V. arvatica Jord.—Chipstable (E. S. Marshall); Pill (I. M. Roper).

V. contempta Jord.—Milton Clevedon (E. S. Marshall); Wraxall Hill (J. W. White).

V. variata Jord.—Barwick.

V. lepida Jord.—Barrington (I. M. Roper).

V. lutea Huds.—Exford, Winsford (E. S. Marshall).

WILTSHIRE (7, 8).

V. Déséglisei Jord., f. *subtilis* (Jord.)—Aldbourne (G. C. Druce).
V. segetalis Jord.—Aldbourne (E. S. Todd).
V. arvatica Jord.—Marlborough.
V. derelicta Jord.—Aldbourne (E. S. Todd).
V. Lloydii Jord.—Badbury.

DORSET (9).

V. agrestis Jord.—Broadstone (Miss Harris); Wool (G. C. Druce).
V. Déséglisei Jord.—Wool (G. C. Druce).
V. contempta Jord.—Morden Decoy (E. F. Linton).
V. Lloydii Jord.—Kinson (E. F. Linton).
V. variata Jord., var. *sulphurea* Drabble—Blanford (E. F. Linton).

ISLE OF WIGHT (10).

V. agrestis Jord.—Freshwater (E. & H. Drabble).
V. segetalis Jord.—Alverstone (1869).
V. ruralis Jord.—Newport, St Lawrence (G. C. Druce).
V. anglica Drabble—Freshwater (E. & H. Drabble).
V. vectensis F. N. Williams—Bembridge (C. E. Palmer).

HAMPSHIRE (11, 12).

V. agrestis Jord.—Alresford (G. C. Druce); Winchester (J. Comber); Liphook.
V. segetalis Jord.—Albury Hill.
  f. *obtusifolia* (Jord.)—Hursley (G. C. Druce); Odiham (C. E. Palmer).
V. ruralis Jord.—Odiham (C. E. Palmer); Hurlston (G. C. Druce).
V. latifolia Drabble—Alresford (G. C. Druce); Odiham (C. E. Palmer).
V. arvatica Jord.—Itchin Abbas (R. W. Butcher); Odiham (C. E. Palmer).
V. contempta Jord.—Odiham (C. E. Palmer).
V. Lejeunei Jord.—Odiham (C. E. Palmer); Christchurch.
V. variata Jord., var. *sulphurea* Drabble—Odiham (C. E. Palmer).
V. monticola Jord.—Odiham (C. E. Palmer).
V. lepida Jord.—Christchurch.

SUSSEX (13, 14).

V. agrestis Jord.—Hellingley (E. Bray); Selham.
V. Déséglisei Jord.—Hellingley (E. Bray).
  f. *subtilis* (Jord.)—Hellingley (E. Bray).
V. segetalis Jord.—Horsham (E. Drabble).
V. ruralis Jord.—Bexhill (E. Drabble); Selham (E. S. Marshall).
V. anglica Drabble—Bexhill (E. Drabble).
V. Lloydii Jord.—Newmarket.
V. Lejeunei Jord.—Mayfield (W. Borrer); Crowborough.

V. variata Jord.—Bexhill (H. L. Green); Brighton (E. Drabble); Borden Wood (J. E. Little); Barcombe, Battle.

V. lepida Jord.—Chailey (P. Hilton).

KENT (15, 16).

V. agrestis Jord.—Meopham (C. E. Britton).

V. Déséglisei Jord.—Grove Park (J. Groves); West Wickham (J. E. Little); Benenden, Bexley.

f. *subtilis* Jord.—Cobham (E. Drabble); Stone.

V. segetalis Jord.—Folkestone (C. Bailey); Wye.

f. *obtusifolia* (Jord.)—Cobham (E. Drabble).

V. ruralis Jord.—Cobham (E. Drabble); Longfield, Meopham Green (C. E. Britton); Littlestone on Sea (G. C. Druce).

V. anglica Drabble—Folkestone (W. R. Sherrin); St Margaret's Bay.

V. contempta Jord.—Cobham (E. Drabble); Stone.

V. Lloydii Jord.—Bexley (1852).

V. Lejeunei Jord.—Sawley (E. S. Marshall); Seven Oaks, Tonbridge, Tunbridge Wells (E. Drabble).

V. variata Jord.—Ide Hill (C. E. Salmon).

var. *sulphurea* Drabble—Chatham, Nurstead (C. E. Britton); East Wickham.

V. alpestris Jord.—Luddesdown.

V. cantiana Drabble—Seven Oaks (E. Drabble); Ashurst (E. B. Bishop).

V. lepida Jord.—Knockholt (S. E. Chandler); Sandling Park, Seven Oaks, Tunbridge Wells (E. Drabble); Wrotham (C. E. Britton); Seal.

SURREY (17).

V. agrestis Jord.—Cheam (Miss Harris); Croydon (A. Bennett); Ham, Sanderstead (E. Drabble); Hindhead (C. Bailey); Leigh (C. E. Salmon); Pyrford (G. C. Druce); Worplesdon (W. R. Linton); Wotton (W. R. Sherrin).

V. Déséglisei Jord.—Barnes (E. Drabble); Coulsdon, Wotton (C. E. Britton); Chiddingfold, Godalming.

f. *subtilis* (Jord.)—Clandon Downs, Coulsdon Common (C. E. Britton).

V. segetalis Jord.—Ham, Reigate (E. Drabble); Byfleet, Weybridge.

f. *obtusifolia* Jord.—Send, West Horsley (C. E. Britton); Compton, Godalming.

V. ruralis Jord.—Albury (J. Comber); Banstead, Farley Heath, Farthing Down (C. E. Britton); Chobham, Lower Mordon (W. A. Todd); Croham Hurst, Epsom (J. E. Lousley); Guildford, West Horsley (E. Drabble); Shere (C. E. Salmon); Wisley (F. J. Chittenden); Woodham.

V. latifolia Drabble—Guildford, Headley (E. Drabble); Pyrford (G. C. Druce); Wisley (F. J. Chittenden); Godalming.

V. anglica Drabble—Clandon, Farthing Down (C. E. Britton); Cobham (E. Drabble); Godstone (C. E. Salmon).

V. arvatica Jord.—Guildford (E. Drabble); Hascombe (E. B. Bishop).

V. derelicta Jord.—Ashtead (C. E. Salmon); Hascombe (E. B. Bishop); Reigate (E. Drabble).

V. contempta Jord.—Leigh (C. E. Salmon); Shere (E. Drabble); Wisley (F. J. Chittenden).

V. Lloydii Jord.—Byfleet, Peper Harrow (R. J. Burdon); Gomshall (C. E. Salmon); Wisley (F. J. Chittenden); Camberley, Woking.

var. *insignis* Drabble—Wisley (F. J. Chittenden).

V. Lejeunei Jord.—Wisley (F. J. Chittenden); Claygate, Thames Ditton.

V. variata Jord.—Chobham, Kingswood (E. Drabble); Gomshall, Norbury (C. E. Salmon).

var. *sulphurea* Drabble—Chobham, Guildford (E. Drabble); Gomshall (C. E. Salmon); Horsham, Pyrford (C. E. Britton); Wisley (F. J. Chittenden); Claygate, Shackleford, Thames Ditton, Thorpe, West Horsley, Woodham.

V. cantiana Drabble—Brockham (1840).

V. monticola Jord.—Gomshall (E. B. Bishop); Shackleford.

V. lepida Jord.—Godalming (E. B. Bishop); Gomshall (C. E. Salmon),

ESSEX (18, 19).

V. agrestis Jord.—Ansell (G. C. Druce); Saffron Walden (R. W. Butcher).

V. ruralis Jord.—Blackheath near Colchester, Layer Marney (G. C. Brown).

V. anglica Drabble—Layer Marney (G. C. Brown).

V. Lloydii Jord.—Finchingfield.

V. Lejeunei Jord.—Moreton (A. H. Wolley-Dod).

V. variata Jord., var. *sulphurea* Drabble—Alphamstone (G. C. Brown).

HERTFORDSHIRE (20).

V. agrestis Jord.—High Down, Welwyn (J. E. Little); Hertford.

V. segetalis Jord.—Hitchin, Welwyn (J. E. Little).

V. ruralis Jord.—Sarratt (C. E. Britton).

V. anglica Drabble—Royston.

V. arvatica Jord.—High Down (J. E. Little).

V. derelicta Jord.—Little Wymondley (J. E. Little).

V. variata Jord.—Albury (G. C. Druce); Great Wymondley (J. E. Little).

var. *sulphurea* Drabble—Albury (G. C. Druce); Great Wymondley (J. E. Little); Sarratt (C. E. Britton).

MIDDLESEX (21).

V. Déséglisei Jord.—Golders Green (E. & H. Drabble); Hounslow.

V. arvatica Jord.—West Drayton (W. R. Sherrin).

V. contempta Jord.—Harefield (E. Drabble).

V. Lloydii Jord., var. *insignis* Drabble—Mill Hill (E. & H. Drabble).

V. Lejeunei Jord.—Harefield (E. Drabble); Greenford Green.

BERKSHIRE (22).

V. agrestis Jord.—Newbury, Wash Common (W. Bell); Wokingham (H. W. Monckton).

V. Déséglisei Jord.—Bucklebury, Frilford (G. C. Druce).

V. segetalis Jord., f. *obtusifolia* (Jord.)—Easthampstead Park (H. W. Monckton); Marcham, Moulsford (G. C. Druce).

V. ruralis Jord.—Boxford, Finchampstead, Frilford, Lambourne Valley, Wallingford (G. C. Druce).

V. contempta Jord.—Frilford, Hurst Mill, Wallingford (G. C. Druce).

V. variata Jord.—Frilford (G. C. Druce).

var. *sulphurea* Drabble—Bagshot, Boar's Hill, Boxford, Cothill, Tubney (G. C. Druce).

V. Lloydii Jord.—Ambarrow (H. W. Monckton).

OXFORDSHIRE (23).

V. agrestis Jord.—Oxford (R. W. Butcher).

V. Déséglisei Jord.—Bix, Burford, Oxford (G. C. Druce); Wiggington (H. J. Riddelsdell).

f. *subtilis* (Jord.)—Burford Downs, Heyford, Oxford (G. C. Druce).

V. segetalis Jord.—Burford, Nuneham, Osney, Oxford (G. C. Druce); Milton (H. J. Riddelsdell).

f. *obtusifolia* (Jord.)—Haseley, Oxford (G. C. Druce).

V. ruralis Jord.—Chipping Norton, Coomb Wood, Cowley, Crowell, Gangsdown, Woodstock (G. C. Druce); Wigginton (H. J. Riddelsdell).

V. anglica Drabble—Bladon, Woodstock (G. C. Druce); Wigginton (H. J. Riddelsdell).

V. arvatica Jord.—Wigginton (H. J. Riddelsdell).

V. contempta Jord.—Heyford, Gathampton (G. C. Druce); Goring (H. J. Riddelsdell).

V. Lloydii Jord.—Hook Norton (1864).

V. variata Jord.—Charlbury, Littlemore (G. C. Druce); Wigginton Heath (H. J. Riddelsdell).

var. *sulphurea* Drabble—Checkenden, Coomb Wood, Cowley, Headington, Littlemore, Oxford, Woodcote, Woodstock (G. C. Druce); Wigginton (H. J. Riddlesdell).

BUCKINGHAMSHIRE (24).

V. agrestis Jord.—Chesham (E. Drabble).

V. Déséglisei Jord.—Hanslope, Hodgemoor Wood, Lee (G. C. Druce).

V. segetalis Jord.—Brickhill, Burnham, Denham, Seer Green (G. C. Druce).

V. ruralis Jord.—Amersham, Akeley, Denham, Hampden, Oakley, Stokenchurch, Winslow, Wooburn Green (G. C. Druce); High Wycombe (J. Britten).

V. arvatica Jord.—Amersham (E. & H. Drabble); Moreton Green, West Wycombe (G. C. Druce).

V. contempta Jord.—Denham, Hampden, Haslemere, High Wycombe, Hodgemoor Wood, Lacey Green, Moreton Green, Seer Green, Slough (G. C. Druce).

V. Lloydii Jord.—Amersham (M. E. Page); Hanslope, Missenden (G. C. Druce).
V. variata Jord.—Chesham Bois, Coles Hill, Wooburn (G. C. Druce).
var. *sulphurea* Drabble—Beaconsfield, Bradenham, Chalfont, Denham, Slough (G. C. Druce).
V. monticola Jord.—High Wycombe (L. J. Tremayne).

SUFFOLK (25, 26).

V. agrestis Jord.—Bury St Edmunds (G. C. Druce).
V. Déséglisei Jord.—Kirkley.
V. segetalis Jord.—Gorleston (A. E. Cook).
f. *obtusifolia* (Jord.)—Raydon (G. C. Brown).
V. ruralis Jord.—Cavenham (E. S. Marshall); Raydon, Shelley (G. C. Brown).
V. anglica Drabble—Icklingham (R. W. Butcher).
V. variata Jord.—Higham, Tuddenham (R. W. Butcher).
V. lutea Huds., f. *Pesneaui* Lloyd & Foucaud—Barham St Gregory, Brandon, Sutton Common (G. C. Brown); Thetford Heath (W. C. F. Newton).

NORFOLK (27, 28).

V. Déséglisei Jord.—Stow (G. C. Druce).
V. ruralis Jord.—Sprowston (E. F. Linton); Wraxham (M. Pallis).
V. arvatica Jord.—North Walsham (K. Norrington).
V. anglica Drabble—Wraxham (M. Pallis).
V. variata Jord., var. *sulphurea* Drabble—Foulsham (W. L. Notcutt); Framlingham.
V. lepida Jord.—Thetford (R. W. Butcher).
V. lutea Huds., f. *Pesneaui* Lloyd & Foucaud—Croxton (F. Robinson); Santon Warren (J. E. Little).

CAMBRIDGESHIRE (29).

V. agrestis Jord.—Gamlingay (C. E. Moss); Fordham.
V. segetalis Jord.—Fordham, Harston.
V. ruralis Jord.—Cambridge (C. E. Moss).
V. latifolia Drabble—Gamlingay.
V. anglica Drabble—Babraham, Cherry Hinton (R. W. Butcher); Newmarket.
V. variata Jord.—Chippenham, Newmarket (G. C. Druce).

BEDFORDSHIRE (30).

V. ruralis Jord.—Wooton (G. C. Druce).
V. variata Jord., var. *sulphurea* Drabble—Luton (C. E. Britton).

HUNTINGDONSHIRE (31).

V. agrestis Jord.—Woodwalton Fen (E. W. Hunnybun).
V. Déséglisei Jord.—Stibbington (G. C. Druce).
V. ruralis Jord.—Orton (G. C. Druce).
V. contempta Jord.—Holme (G. C. Druce).

NORTHAMPTONSHIRE (32).

V. Déséglisei Jord.—Long Marston.

V. ruralis Jord.—Ashton, Barnack, Cosgrove, Harleston (G. C. Druce).

V. arvatica Jord.—Eye (G. C. Druce).

V. Lejeunei Jord.—Middleton (G. C. Druce).

V. variata Jord., var. *sulphurea* Drabble—Barnack (G. C. Druce).

GLOUCESTERSHIRE (33, 34).

V. agrestis Jord.—Ashton Gate, Cirencester, Kempsford, Lydney (H. J. Riddelsdell); Gloucester, Southrop.

V. Déséglisei Jord.—Chatcombe, Cirencester, Cranham, Ford (H. J. Riddelsdell).

f. *subtilis* (Jord.)—Fostons Ash.

V. segetalis Jord.—Ford (H. J. Riddelsdell).

V. ruralis Jord.—Bisley (S. Gibson); Cheltenham (W. L. Notcutt); Stroud.

V. arvatica Jord.—Cirencester, Welford (H. J. Riddelsdell).

V. derelicta Jord.—Cranham Common (H. J. Riddelsdell).

V. contempta Jord.—Coates, Newent.

V. variata Jord., var. *sulphurea* Drabble—Colesbourne, Kempsfield, Sapperton (H. J. Riddelsdell); Tockington (I. M. Roper); Frampton Mansell.

V. cantiana Drabble—Cirencester.

MONMOUTHSHIRE (35).

V. Déséglisei Jord.—Llantony.

V. ruralis Jord.—Castleton, Ilton.

V. variata Jord., var. *sulphurea* Drabble—Castleton.

HEREFORDSHIRE (36).

V. arvatica Jord.—Ross (W. R. Sherrin); Sellack (A. Ley).

V. Lloydii Jord.—Brilley (S. H. Bickham).

V. Lejeunei Jord.—Brilley (A. Ley).

V. variata Jord., var. *sulphurea* Drabble—Hope Mansell, Ross (A. Ley).

V. lepida Jord.—Cowley Pool (A. Ley); St Weonards.

V. lutea Huds.—How Caple (A. Ley).

WORCESTERSHIRE (37).

V. arvatica Jord.—Bredon Hill (R. Saunders).

V. latifolia Drabble—Worcester (I. E. Allen).

V. contempta Jord.—Great Malvern, Welland (R. F. Towndrow).

V. lutea Huds., f. *Pesneaui* Lloyd & Foucaud—Churchill (C. Rea).

WARWICKSHIRE (38).

V. segetalis Jord., f. *obtusifolia* (Jord.)—Kenilworth (J. A. Wheldon).

V. ruralis Jord.—Kingsbury, Lighthorne (C. E. Palmer); Myton.

V. latifolia Drabble—Kenilworth (J. A. Wheldon).

V. variata Jord., var. *sulphurea* Drabble—Myton.

STAFFORDSHIRE (39).

V. Déséglisei Jord.—Burton-on-Trent, Stafford.
V. ruralis Jord.—Biddulph, Lichfield (G. C. Druce).
V. Lloydii Jord.—Leek (M. E. Page).
V. alpestris Jord.—Ecton (W. H. Purchas).

SHROPSHIRE (40).

V. Déséglisei Jord.—Sharpstones Hill (J. C. Melvill).
  f. *subtilis* (Jord.)—Sharpstones Hill (J. C. Melvill).
V. ruralis Jord.—Shrewsbury (1834).
V. Lloydii Jord.—Grinshill (H. A. Jones).
V. lepida Jord.—Ironbridge (A. Bennett); Ivybridge, Neach Hill, Wroxeter.
V. lutea Huds.—Caradoc (H. A. Jones); Oswestry, Stiperstones.

GLAMORGANSHIRE (41).

V. agrestis Jord.—Hendrefoilan, Llandaff, Llwydcoed (H. J. Riddelsdell).
V. Déséglisei Jord.—Aberdare, Llantwyt Major, Llwydcoed (H. J. Riddelsdell); Penarth Ferry (A. E. Wade).
V. segetalis Jord.—Aberdare, Llandaff (H. J. Riddelsdell).
  f. *obtusifolia* (Jord.)—Llwydcoed (H. J. Riddelsdell).
V. ruralis Jord.—Llwydcoed (H. J. Riddelsdell).
V. arvatica Jord.—Porthcawl, Radyr (H. J. Riddelsdell).
V. Lloydii Jord.—Llandaff, Llwydcoed (H. J. Riddelsdell).
V. variata Jord.—Abernant (H. J. Riddelsdell).
V. lutea Huds.—Aberdare, Craig Koynoch.
  f. *Curtisii* Forster—Breton Ferry, Crymlyn Burrows, Whitford Burrows (E. F. Linton); Kenfig Burrows, Merthyr Maior Warren, Port Talbot Burrows (E. S. Marshall).

BRECKNOCKSHIRE (42).

V. segetalis Jord.—Llangammarch (A. Ley).
V. Lloydii Jord.—Three Cocks Junction.
  var. *insignis* Drabble—Llangammarch (A. Ley).
V. Lejeunei Jord.—Llangammarch (A. Ley).

RADNORSHIRE (43).

V. Lejeunei Jord.—Knighton (A. H. Wolley-Dod).
V. variata Jord.—Cregrina.
V. lepida Jord.—Knighton (A. H. Wolley-Dod); Aberdare.
V. lutea Huds.—Llandrindod (C. Bailey); Reeves Hill.

CARMARTHENSHIRE (44).

V. Lloydii Jord.—Carmarthen.
V. lutea Huds., f. *Curtisii* Forster—Kidwelly Burrows (H. L. Jones); Pembey Burrows (E. S. Marshall); Pendine (A. Wallace); Ferry Side.

PEMBROKESHIRE (45).

V. agrestis Jord.—Tenby (S. H. Bickham).
V. Déséglisei Jord.—St David's (E. F. Linton).
V. segetalis Jord.—St David's (E. F. Linton).
V. contempta Jord.—Proud Giltar, Tenby (S. H. Bickham).
V. Lejeunei Jord.—St David's (E. F. Linton).
V. lutea Huds.—St David's (E. F. Linton).

CARDIGANSHIRE (46).

V. lepida Jord.—Aberystwyth (A. E. Cook); Lampeter (H. J. Riddelsdell).
V. lutea Huds.—Bethania, Bwlch Mountain, Tregaron, Yspytty Cynfyn.

MONTGOMERYSHIRE (47).

V. lutea Huds.—Gregynog, Llanidloes (R. J. N. Streeter); Plynlimmon.

MERIONETHSHIRE (48).

V. segetalis Jord.—Dolgelly (W. C. Barton).
V. Lejeunei Jord.—Tyn-y-Groes.
V. lutea Huds.—Bala (H. S. Foster); Ilroy (H. Groves); Penmachno (A. Ley); Aberdovey, Corwen, Dolgelly.
  f. *calaminaria* Lejeune—Towyn.
  f. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—Barmouth (C. Bailey); Llanaber (G. Goode).
  f. *Pesneaui* Lloyd & Foucaud—Harlech, Mochras (D. A. Jones); Pensarn (G. A. Bishop).

CARNARVONSHIRE (49).

V. lutea Huds.—Bangor (E. S. Gregory); Devil's Bridge (Mrs Henley).

DENBIGHSHIRE (50).

V. Lejeunei Jord.—Chirk.
V. lepida Jord.—Hafod (I. M. Roper).
V. lutea Huds.—Llanrwst.

FLINTSHIRE (51).

V. contempta Jord.—Cwm (J. A. Wheldon).
V. variata Jord.—Holywell (J. Comber).
V. lutea Huds.—Cwm Mountain (J. Comber).

ANGLESEA (52).

V. segetalis Jord.—Beaumaris.
V. Lloydii Jord.—Anglesea (no locality, J. E. Griffith).
V. lutea Huds., f. *Curtisii* (Forster)—Aberffraw, Bodafon, Holyhead, Penrhos (C. Bailey); Llyn Coron (S. H. Bickham); Newborough (E. S. Todd); Maelog Lake, Meldraeth Sands.

LINCOLNSHIRE (53, 54).

V. latifolia Drabble—Cleethorpes (E. & H. Drabble).

LEICESTERSHIRE (with RUTLAND) (55).

V. agrestis Jord.—Ayleston, Kebworth Beauchamp, Knighton Grange, Narborough, Swithland, Syston (A. R. Horwood).

V. Déséglisei Jord.—Billesdon, Branston, Casterton, Kilby, Lubbesthorpe, Lutterworth, Morcott, Shepshed, Syston, Tilton Hill (A. R. Horwood); Knighton (W. Bell); Worthington (M. E. Page).

f. *subtilis* (Jord.)—Goadby Marwood, Saltby (A. R. Horwood).

V. segetalis Jord.—Lutterworth (W. Bell).

f. *obtusifolia* (Jord.)—Aylestone, Groby (A. R. Horwood); Knighton, Leicester, Leicester Forest East (W. Bell); Mowsley, Potter's Marston (A. E. Wade).

V. ruralis Jord.—Normanton (A. R. Horwood).

V. latifolia Drabble—Cadeby, Kilby, Narborough, Oadby, Thurlaston (A. R. Horwood); Rothley Plain (W. Bell).

V. anglica Drabble—Harby Hills (A. R. Horwood).

V. arvatica Jord.—Cadeby, Goadby Marwood, Knipton (A. R. Horwood); Knighton, South Knighton, Oadby (W. Bell).

V. derelicta Jord.—Newtown Linford (W. Bell).

V. contempta Jord.—Normanton (A. R. Horwood).

V. Lloydii Jord., var. *insignis* Drabble—Leicester, Sibstone (W. Bell).

V. Lejeunei Jord.—Leicester, Wigston (W. Bell).

V. variata Jord.—Higham (A. R. Horwood).

var. *sulphurea* Drabble—Narborough Bog, Normanton (A. R. Horwood).

NOTTINGHAMSHIRE (56).

V. segetalis Jord.—Misson (E. & H. Drabble).

f. *obtusifolia* (Jord.)—Strelley (W. Norbury).

V. Lloydii Jord., var. *insignis* Drabble—Strelley (W. Norbury).

V. Lejeunei Jord.—Misson (E. & H. Drabble).

V. lepida Jord.—Everton, Misson (E. & H. Drabble).

DERBYSHIRE (57).

V. agrestis Jord.—Barlow, Boythorpe, Hasland, Linacre, Tapton, Upper Loads (E. & H. Drabble).

V. Déséglisei Jord.—Ashover Hay, Boythorpe, Cathole, Cromford, Freebirch (E. & H. Drabble).

f. *subtilis* (Jord.)—Clowne (E. & H. Drabble).

V. segetalis Jord.—Brampton, Bretton, Eyam, Linacre, Norton Leas (E. & H. Drabble).

f. *obtusifolia* (Jord.)—Bakewell, Brampton, Chesterfield, Duckmanton, Grindleford, Spital, Walton (E. & H. Drabble).

V. ruralis Jord.—Wingerworth (E. & H. Drabble); Repton, Stapenhill (W. R. Linton).

V. latifolia Drabble—Barlow (E. & H. Drabble).

V. arvatica Jord.—Barlow, Boythorpe (E. & H. Drabble).

V. derelicta Jord.—Linacre (E. & H. Drabble).

V. contempta Jord.—Chesterfield, Elmton, Eyam (E. & H. Drabble).

V. Lloydii Jord.—Cowley Bar, Eyam, Linacre (E. & H. Drabble).

V. Lejeunei Jord.—Eyam, Linacre, Norton (E. & H. Drabble).

V. lepida Jord.—Cromford, Eyam, Freebirch, Linacre (E. & H. Drabble); Wirksworth (W. R. Linton).

V. lutea Huds.—Ashover, Black Rocks, Blackwall, Bonsall, Bretton, Buxton, Castleton, Coombes Moss, Cromford, Eyam, Matlock, Middleton-by-Youlgreave, Miller's Dale, Sheldon, Wardlow Hay Cop, Wirksworth (E. & H. Drabble).

f. *polychroma* (Kerner)—Eyam (E. & H. Drabble).

f. *calaminaria* (Lejeune)—Sheldon, Wadshelf.

CHESHIRE (58).

V. agrestis Jord.—Malpas (A. H. Wolley-Dod); Whitby, Wallasey (E. & H. Drabble).

V. Déséglisei (Jord).—Tilston (A. H. Wolley-Dod).

V. segetalis Jord.—Bromborough (J. W. Burton); Chester (C. Waterfall); Malpas (A. H. Wolley-Dod).

f. *obtusifolia* (Jord.)—Bidston, New Brighton, Wallasey (E. & H. Drabble).

V. ruralis Jord.—Ashley, Lindon Common (C. Bailey); Bidston, Burton Point, New Brighton, Wallasey (E. & H. Drabble).

V. latifolia Drabble—Wallasey (E. & H. Drabble).

V. anglica Drabble—Wallasey (E. & H. Drabble).

V. arvatica Jord.—(E. & H. Drabble).

V. contempta Jord.—Burton Point (E. & H. Drabble); Malpas (A. H. Wolley-Dod).

V. Lloydii Jord.—Bowdon (S. H. Bickham); Wallasey (E. & H. Drabble); Mobberley.

V. variata Jord.—Arlington, Wilmsford (C. Bailey); Bidston (E. & H. Drabble); Bowdon (S. H. Bickham).

var. *sulphurea* Drabble—Oxton, Wallasey (E. & H. Drabble).

V. lutea Huds., f. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—New Brighton (F. M. Webb, 1862); Wallasey (J. H. Lewis, 1873). These are the dates of the latest gatherings I have seen. The plant is now extinct in both localities.

LANCASHIRE (59, 60, 69 in part).

V. agrestis Jord.—Dalton (D. Lumb); Formby, Hightown (E. & H. Drabble); Rainford Moss (W. G. Travis); Walton (J. A. Wheldon); Ulverston.

V. Déséglisei Jord.—Cockerham Moss, Rainford Moss (J. A. Wheldon); Hightown (E. & H. Drabble); Wreaks Bridge, Urswick (W. H. Pearsall).

f. *subtilis* Jord.—Cockerham Moss, Simmonswood (J. A. Wheldon); Causeway End.

V. segetalis Jord.—Cockerham Moss, Lytham, Mossley (J. A. Wheldon); Dalton (D. Lumb); St Annes, Southport, Withington (C. Bailey); Sawrey (W. H. Pearsall).

f. *obtusifolia* (Jord.)—Cockerham, Lytham, Walton (J. A. Wheldon); Ince Blundell (E. & H. Drabble).

V. ruralis Jord.—Askham, Dalton (D. Lumb); Formby, Hightown, Ince Blundell (E. & H. Drabble); Kent's Bank (W. H. Pearsall); Silverdale (J. Cryer); Southport (C. Bailey); Walton (J. A. Wheldon); Plumpton.

V. latifolia Drabble—Lytham (E. Drabble); Manchester (C. Bailey).

V. anglica Drabble—Dalton, Kent's Bank (W. H. Pearsall); Hall Road, Hightown (E. & H. Drabble); Silverdale.

V. arvatica Jord.—Broughton-in-Furness, Sawrey (W. H. Pearsall); Hightown (E. & H. Drabble); Silverdale.

V. Lloydii Jord.—Carnforth, Cockerham, Newton-le-Willows, Rainford Moss, Simmonswood (J. A. Wheldon); Crooklands (D. Lumb); Whiston (Fr. Toohey).

var. *insignis* Drabble—Rainford Moss (J. A. Wheldon).

V. Lejeunei Jord.—Billinge, Brathay (J. A. Wheldon); Dalton, Deer Dyke Moss (W. H. Pearsall); Foxfield (D. Lumb).

V. variata Jord.—Foxfield (D. Lumb); Prestwich, Rainford, Simmonswood, Warton Crag (J. A. Wheldon); Stribers Moss (W. H. Pearsall); Whiston (Fr. Toohey).

var. *sulphurea* Drabble—Stribers Moss (W. H. Pearsall); Netherton.

V. alpestris Jord.—Brathay (J. Comber); Stribers Moss (W. H. Pearsall).

V. monticola Jord.—Ormskirk (W. G. Travis).

V. lepida Jord.—Brathay (J. Comber); Broughton-in-Furness, Haverthwaite, Stribers Moss (W. H. Pearsall); Carnforth, Leck, Nateby, Pilling, Simmonswood, Woolston Moss (J. A. Wheldon).

f. *carpatica* (Borbás)—Cockerham Moss, Pilling (J. A. Wheldon); Haverthwaite (W. H. Pearsall); Thrang Moss (A. Wilson).

V. lutea Huds., f. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—Ansdell (E. Drabble); Fairhaven (C. Bailey); Landscale (D. Lumb).

f. *Pesneaui* Lloyd & Foucaud—Ansdell, Birkdale, Lytham, St Annes, Southport (E. Drabble); Askham, Sandscale (D. Lumb); Blackpool, Fairhaven (C. Bailey); Walney Island (J. Comber).

YORKSHIRE (61, 62, 63, 64, 65).

V. Déséglisei Jord.—Thirsk (J. G. Baker).

V. segetalis Jord.—Adel (J. Cryer); Sowerby (J. G. Baker); Strensall.

f. *obtusifolia* (Jord.)—Baildon (M. E. Page); Thirsk (J. G. Baker).

V. ruralis Jord.—Sowerby, Thirsk (J. G. Baker).

V. contempta Jord.—Thirsk (J. G. Baker).

V. Lloydii Jord.—Baildon (M. E. Page); Bingley, Shipley (J. Cryer); Nunthorpe (W. J. Fordham); Thirsk (J. G. Baker); Askern.

var. *insignis* Drabble—Bingley (J. Cryer).

V. Lejeunei Jord.—Adel (J. Cryer); Nunthorpe (W. J. Fordham); Thirsk (J. G. Baker).

V. lepida Jord.—Bawtry (E. & H. Drabble); Huddersfield (T. W. B. Ingle); Malham Cove (A. E. Lomax); Scrampton Hall (G. C. Druce); Newton-in-Bowland.

V. lutea Huds. (including f. *amoena* Henslow)—Halifax, 1843 (S. King); Hawes, Settle, Widy Bank (J. A. Wheldon); Kepwick, Kettlewell, Langreth, Micklem, Middleton-in-Teesdale (W. S. Fordham); Lytton (C. Waterfall); Malham (J. Cryer); Pateley Bridge (T. N. Ferrier); Upper Cronkley Bridge (J. G. Baker).

DURHAM (66).

V. agrestis (Jord).—Whitburn.
V. ruralis Jord.—Ballard Down.
V. variata Jord.—Butterby, Gibside Hill.
V. lutea Huds. (including f. *amoena* Henslow)—Bishop Auckland (J. P. Souther); High Force (T. Gibbs); Upper Teesdale (E. S. Marshall); Butterby, Darlington.

NORTHUMBERLAND (67, 68).

V. variata Jord.—Ryton, Wyland.
V. monticola Jord.—Doddington (I. M. Hayward).
V. lutea Huds. (including f. *amoena* Henslow)—Barton Mill (C. Bailey); Carter Fell, Cheviot, Plankey Allen, Throckrington Quarry.

WESTMORLAND (69).

V. Lejeunei Jord.—Ambleside (H. Fisher, 1866).
V. variata Jord.—Rydal.
V. lepida Jord.—Ambleside (N. Haffenden); Little Langvale, Troutbeck.
V. lutea Huds.—Dollywagon, Keswick (E. & H. Drabble); Ravenstone Dale, Shap.

CUMBERLAND (70).

V. agrestis Jord.—Duddon Bridge, Low Boghouse (W. H. Pearsall).
V. Déséglisei Jord.—Skinburness.
  f. *subtilis* (Jord.)—Wythburn (E. & H. Drabble).
V. segetalis Jord.—Hall Thwaites (W. H. Pearsall).
  f. *obtusifolia* (Jord.)—Hall Thwaites (W. H. Pearsall).
V. contempta Jord.—Wythburn (E. & H. Drabble).
V. Lloydii Jord.—Drigg (A. Wallis).
V. variata Jord.—Brampton, Watermillock (G. C. Druce).
V. lepida Jord.—Duddon Hall, Elf Hall (W. H. Pearsall); Great Langdale, Penrith (C. Bailey).
V. lutea Huds. (including f. *amoena* Henslow) -Alston, Catterpallot near Melmerby (C. Waterfall); Great Salkeld (C. E. Salmon); Melbreak (J. Comber); Thirlmere (E. & H. Drabble); Skiddaw.
  f. *Pesneaui* Lloyd & Foucaud—Drigg (A. Wallis).

ISLE OF MAN (71).

V. segetalis Jord.—Laxey, Ramsey (C. H. Waddell).
V. arvatica Jord.—Ramsey (C. H. Waddell).
V. lutea Huds., var. *Curtisii* (Forster). (*Forsteri* H. C. Wats.)—Ballagh (J. S. Rouse).

PERSONALIA AND VARIOUS NOTES.

Mr R. M. Adam, deputising for Professor Drummond, lectured before the Royal Caledonian Horticultural Society on "The Vegetation of Ben Lawers." He said that although it only ranks as fiftieth in the order of height among British mountains it surpasses all others in its wealth of species. Out of the 1024 recorded Scottish plants some 500 could be gathered on or in the vicinity of that mountain. He stated that on the higher levels a society of plants was to be found which must be regarded as constituting a mere remnant of a former flora which dominated the entire kingdom. This was an arctic flora which, in a war waged between arctic and southern types, was beaten by the climate, and its scope became less. The diminishing arctic species have gradually retreated to those regions where only the most hardy and resistant can survive. This process is going on to-day, and Ben Lawers may be regarded as one of the last citadels of those much harassed plants. The statements he made are somewhat dogmatic although, perhaps, in the main correct, but they do not entirely explain why Ben Lawers is so unusually rich. Our readers should consult Patton's papers (*Rep. B.E.C.*, 797, 1922, and 268, 1923), on the Flora of Ben Lawers and Ben Laoigh.

Mr L. H. Bailey, the well-known writer and compiler of the Cyclopedia of Horticulture, has been chosen president of the American Society for the Advancement of Science. It has a membership roll of 15,000.

Sir I. B. Balfour. A memorial to his memory was unveiled in Edinburgh Botanical Gardens by Sir Herbert Maxwell, Bart., on September 28th. It bears this inscription:—"This stone commemorates Sir Isaac Bayley Balfour, Keeper of these Gardens, 1888-1922, and is set here by his colleagues and friends to reward the zeal with which he worked, and the affection which they bore him." The main memorial, however, is to be at Ben More, Argyllshire, on the east side of the road leading from Dunoon to Loch Eck. The area is already planted with numerous exotic trees.

Mr W. Dallimore, the well-known writer on Coniferae, has been made Curator of the Museum at the Royal Botanic Gardens, Kew.

Sir Daniel Hall, K.C.B., F.R.S., has been appointed to succeed Prof. W. Bateson as Director of the John Innes Horticultural Institute at Merton. See notice with portrait in *Gard Chron*. ii., 122, 1926.

Sir George Higginson of Marlow. The town has purchased a frontage on the Thames known as Court Garden, for a Public Park, on the occasion of Sir George's hundredth birthday. It will be known as Higginson Park. Towards the purchase he gave the money presented to him on that occasion.

Mr William Ingham's collection of British mosses has been presented to the Department of Botany of Leeds University. Mr W. H. Burrell, 44 West View, Horseforth, Leeds, is acting as Honorary Curator, and will gladly receive additions.

Dr B. Daydon Jackson. His portrait, by Mr Edward Moore, was presented to him on May 27th by the Fellows of the Linnean Society and friends. Sir David Prain, in unveiling it, said he had been Botanical Secretary from 1880-1892, and General Secretary up to 1926, when he was appointed Curator of the Linnean Collections. Dr Daydon Jackson deserves all honour for his monumental work on the "Kew Index," while his "Glossary of Botanic Terms," and his "Guide to the Literature of Botany," have been most helpful works. His ready kindness is a household word.

Col. H. Halcro Johnston. Our valued member has arranged the Herbarium formed by Mr Magnus Spence, which illustrates that author's "Flora Orcadensis," which was published in 1914, and enumerated 572 species. 406 of these are represented in the Herbarium, and a few others which are new records. They are mounted on 797 sheets. The plants were gifted to the Natural History Society. They are now enclosed in a solid Austrian Oak Cabinet, which was given by Col. Johnston and his family in memory of their father. The presentation took place in July 1926. Colonel Johnston's Herbarium of Orkney plants is probably the best in existence of a small area, as the specimens are meticulously prepared and illustrated by numerous examples. They are preserved in Austrian Oak air-tight cabinets. Recently he has added many new species of Dandelion to the Orkney Flora.

Prof. J. Percival, The University, Reading, is issuing "A Collection of the Chief Wheats of the World." It includes more than 1300 single-line forms mounted on stout sheets, 36 cm. x 28 cm., and is contained in 15 cases. Price £100.

John Tradescant. Owing to the generosity of the members of the Garden Club of Virginia, a window bearing the arms of Tradescant surmounted by a wreath of *Tradescantia* was unveiled by Lord Fairfax in November last. The window is in the old Ashmolean Museum, Oxford, which was designed by Sir Christopher Wren. The contents of Tradescant's Museum were housed there in 1683, after they were presented to Oxford by Elias Ashmole. Robert Plot, author of "The Natural History of Oxfordshire," was its first keeper.

Professor A. S. Watson, as Sibthorpian Professor of Rural Economy, has been elected to Fellowship of St John's College, Oxford.

Mr T. Barlow Wood, C.B.E., is now Professor of Agriculture at Cambridge.

BLAKENEY POINT, under the National Trust Report 1924-1926, by F. W. Oliver. This gives some most useful details and excellent photographs. On a portion of the reserve certain species have been planted such as *Salix daphnoides*, *Weigelia*, &c. A Library is being formed. Mr Robert Gurney succeeds Mr A. W. Cozens-Hardy as Chairman.

HASLEMERE MUSEUM. The opening of the new Museum took place last September. Sir Jonathan Hutchinson founded it as an educational museum, and he was fortunate in obtaining as Curator our member, Mr G. W. Swainton, A.L.S., the authority on galls. Since 1913 this Museum has been kept going by voluntary subscribers at the cost of about £500 a year. Now a more central site has been found, and as a memorial to Sir Jonathan Hutchinson, the house known as The Lodge was acquired and adapted for the purpose. In 1925 the Museum was enriched by the munificent gift, from the Trustees, of the Peasant Arts Museum and its contents, which had been formed by the Rev. G. S. Davies, Master of the Charterhouse, the Trustees also giving a donation of £1000 towards the building fund. In future its upkeep will need £750 annually. The new building was opened by the Earl of Midleton, and the Warden of New College. Rt. Hon. H. A. L. Fisher proposed a vote of thanks to him and to Dr Bather for their interesting addresses.

KEN WOOD. Through the generosity of Lord Iveagh, 70 acres and the Mansion will become public property in ten years' time.

CITY OF LEEDS Tercentenary Celebrations. July 8-23, 1926. Handbook to the Old Leeds Exhibition. pp. 277, with many illustrations, including that of the Charter, dated 1661. Gardham, Brunswick Works, Leeds. 459 portraits were exhibited, of which many are figured. There was a good selection of Leeds Pottery. There were no Botanical exhibits. An account is given of the Quarries of Leeds, and a large number of Yorkshire stones from quarries in the neighbourhood were shown by W. Irwin, jun., and F. W. Branson.

CITY OF LEICESTER. The Museum and Art Gallery Report (No. 22), 1925-26. One member, Mr G. J. V. Bemrose, has been indefatigable in maintaining a fresh wild-flower show. This has been a popular and instructive exhibit. Nearly £5000 has come from the rates for the maintenance of the Institution. Nearly a quarter of a million visitors have taken advantage of the Museum, the Sunday visitors reaching the number of 92,030.

SHREWSBURY CASTLE has been presented to the town by the local Horticultural Society. It was erected in the time of Edward I.

"THE WYKEHAMIST." From the Wykehamist of July 14, 1926, we notice that Mr Quirk has addressd the Hybrid Orchid which was found on the Winton Down, Winchester. See *Rep. B.E.C.* 508, 1910; 33, 1911 (where it appears as × *Habenaria Jacksonii*), and 158, 1917.

FLOS FLORUM.

Jacksoniensis occidit Platanthera,
Quae nata quondam montibus decus nostris
inusitata crevit atque inaudita,
monstrum biforme, sanguinis genus mixti,
nunc trita plantis insolentibus nulla est.

At vos, abite, pessimi viatores,
alioque tendite, in malam crucem, gressus,
per quos ocellus periit omnium florum,
Jacksonii pulchella Gymplatanthera. R. Q.

"NOTE.—The hybrid orchid found by Mr Jackson in 1910 appears to have died out. The plant, a cross between the genera *Gymnadenia* and *Platanthera*, was new to botany: Kew saw their chance, and named it *Gymplatanthera Jacksonii*."

THE REV. W. KEBLE MARTIN, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send him fresh specimens.

Mr F. J. HANBURY, Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

Mr A. E. WADE, Botanical Department, the University of Cardiff, is contemplating the preparation of a Flora of Monmouthshire, and would be glad of assistance.

Mrs ISABEL ADAMS, F.L.S., is painting British Aquatics. Members wishing to help in collecting specimens are asked to communicate with her at 14 Vernon Road, Edgbaston.

MRS PERRIN, 23 Holland Villas Road, London, W. 14, is continuing her beautiful paintings of British plants. Members willing to assist in collecting specimens are asked to write to the above address.

MR H. BRITTEN, 42 Millfield Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

MR T. A. DYMES, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Herminium*, *Cephalanthera*, *Spiranthes*, &c.

MR C. G. TRAPNELL, 6 Beaufort Road, Clifton, Bristol, would be grateful for the loan of a paper on "The Rubi of Den Edale" by the Rev. W. Moyle Rogers.

PROF. J. M. DRUMMOND gave four lectures at Glasgow on Town Botany in Winter, in the Botany Department of the University, dealing first with seeds and seedlings.

Dr G. Claridge Druce, the Hon. Secretary, begs to thank most warmly those who have so generously and kindly sent their congratulations to him on receiving the high honour of the Fellowship of the Royal Society, and to assure them that he greatly appreciates their good wishes.

DENT DE LION.

(Lines addressed to Dr G. C. Druce, who has recently discovered two new species of Dandelion in Oxfordshire.)

Hail! Champion of the Floral race,
So kindly rooted in this place,
  By Fate who planted thee.
Arrayed in Aldermanic gown,
Surmounted by the laurel crown
  Of Oxford's D.Sc.

Alas! for those whose lack of skill—
Or of "grey matter," if you will—
  Has left them much to learn.
Between the golden blossoms gay,
Of dandelion fields in May,
  No difference they discern.

A dandelion on the lea
A "dandelion" is to me,
  And it is nothing more.
When making dandelion tea,
Its caustic flavour seems to be
  Just what it was before.

But to thy trained botanic eye,
Each plant that blooms beneath the sky
  Its story has to tell.
And two new species take their place,
Which former students failed to trace
  In Oxford field or dell.

So now our glasses we'll combine
To fill with dandelion wine
  And toast thy onward way.
May Time enrich thy fruitful mind
With health and happiness to find
  New species every day.

Reginald A. R. Bennett in "Oxford Times," March 18, 1926

ADDENDA TO PLANT NOTES.

247. LEPIDIUM LINOIDES Thunb., var. SUBDENTATUM (Burch.). Alien. S. Africa. Galashiels, Selkirk, 1926. Miss I. M. HAYWARD. Det. by Dr THELLUNG as *L. divaricatum* Soland., sub-sp. *linoides* (Thunb.) Thell., var. *subdentatum* (Burch.) Thell.

331. SAPONARIA VACCARIA L., var. GRANDIFLORA Fisch. Alien, Orient. Par, Cornwall, W. TRESIDDER. Det., as *Vaccaria pyramidata* Med., var. *grandiflora* (Fisch.) Celak.

419. GERANIUM CORE-CORE Steudel. Alien, Argentina and Chile. Near L'Hermitage, Guernsey, in a lane, Lady DAVY, Mrs KNOWLING, Miss VACHELL & Miss VIVIAN, 1926. Det., with some doubt, by Dr THELLUNG, the specimen being incomplete.

†745. SPIRAEA Van Houttei (Brist.) Zabel. S. CANTONIENSIS Lour. (China, Japan) × S. TRILOBA (L.) Sib. Alien, Hortal. Ballumbie Den, Forfar, 1920, R. & M. CORSTORPHINE. Det. A. THELLUNG.

943. ROSA MOLLIS × PIMPINELLIFOLIA. Dr Heslop-Harrison (*in litt.*) believes *Rosa rubella* to be a back cross—*mollis* with the red fruit behaving as a Mendelian dominant.

1070. OENOTHERA ARGENTINA Lévl. et Thell., var. LONGIPILA Kloos et Thell. in Nederl. Kruidk. Archief, 100, (1921) 1922. Alien, S. America. Dagenham, Essex, 1926, R. MELVILLE. Det. Dr THELLUNG.

1147. ANGELICA SYLVESTRIS L., var. vel forma INCISA Reichb. Near Minehead, Somerset, C. AMHERST. Det. Dr THELLUNG.

1153. HERACLEUM MANEGAZZIANUM Somm. & Levier in Nuov. Giorn. Bot. Ital. ii., 73, 1895. Alien, Caucasus. Ware, Herts, 1920, G. C. DRUCE. Det. Dr THELLUNG. Probably *H. giganteum* of English authors includes this. In great plenty at Dagenham, Essex.

1190. DIERVILLA (cf.) FLORIDA (Bunge) Sieb. & Zucc. (WEIGELA ROSEA Lindl.) Alien, E. Asia. Ballumbie Den, Forfar, 1920, R. & M. CORSTORPHINE. Det. A. THELLUNG.

1292. AMBROSIA PSILOSTACHYA DC. Alien, N. America. Splott, Glamorgan, G. C. DRUCE, R. MELVILLE & R. L. SMITH. Det. Dr THELLUNG.

1474. CENTAUREA ALGERIENSIS Coss. & Dur. Alien, Algeria. Splott, Glamorgan, October 1926. Showed me by R. MELVILLE & R. L. SMITH. Det. Dr THELLUNG.

1850. SOLANUM SARACHOIDES Sendtn. Alien. Central America. Degenham, Essex, 1926, R. MELVILLE. Det. Dr THELLUNG.

2014. SATUREIA ROTUNDIFOLIA (Pers.) Briq. CALAMINTHA ROTUNDIFOLIA Benth. Alien, Mediterranean. Among barley cleanings, Burton-on-Trent, Staffs, 1926, G. C. DRUCE. Det. Dr THELLUNG.

2096. CERATOPHYLLUM. In the Proc. Bristol Nat. Hist. Soc., vol. vi., pt. iv., 303, 1926, Mrs Cecil Sandwith publishes a valuable paper on the Hornworts and their occurrence in Britain. We have, she states, two well defined species:—

C. demersum.—Leaves dark green, stiff, once or twice dichotomously forked, with 2-4 linear segments which are serrulate or denticulate-spinous; fruit smooth or sometimes pitted, at maturity producing near the base two lateral spines, and at the summit a spine which, with the style, at least equals and usually far surpasses the length of the fruit.

C. submersum.—Leaves a clear green, longer than those of *C. demersum*, thrice dichotomously forked, thus usually with eight very finely serrulate capillary segments, occasionally one of these fails to develop at the final lateral forkings. The fruit is hard and often covered with raised tubercles, which are scarcely visible when the fruit is young. There are no lateral spines near the base, and the style is much shorter than the fruit. The whole plant is softer and more collapsible than *C. demersum.*

The existence of *apiculatum* Cham., which belongs to *demersum*, is at present doubtful.

As will be seen from the above description the forking of the leaves offers a character to distinguish between the two species when not fruiting.

2114. AMARANTHUS ANGUSTIFOLIUS Lam., var. POLYGONOIDES (Moq.), sub-var. ANGUSTISSIMUS Thell. Alien. Par, Cornwall, L. MEDLIN. Planta juvenilis forsan leviter monstrosa a typo normali abhorrens tepalis ♀ elongatis sub apicula terminali obtusis. A. THELLUNG.

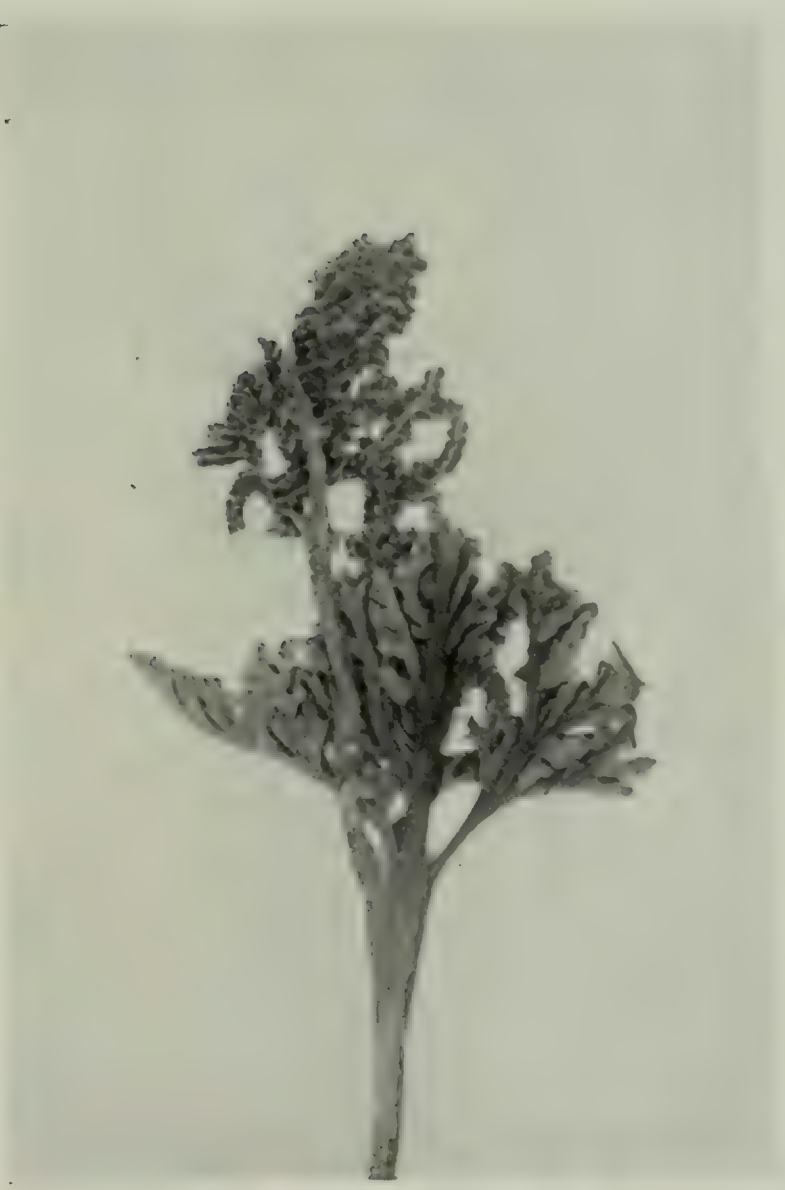
2390. ASPHODELUS TENUIFOLIUS Cav. Alien, India, &c. Abingdon, Berks, G. C. DRUCE & GAMBIER PARRY; Dagenham, Essex, R. MELVILLE.

2789. FESTUCA LIGUSTICA (L.) Willd., var. CILIATA (Parl.) A. & G. Alien, Medit. Splott, Glamorgan, 1926, R. L. SMITH.

2797. BROMUS TECTORUM L., var. GLABRATUS Spenn. Alien. Glasgow, R. GRIERSON. Det. A. THELLUNG.

2878. AGROPYRON PUNGENS (Pers.) R. & L., var. AFFINE (Reichb.). TRITICUM ACUTUM DC., sens. strict. L. PUNGENS × REPENS, ACUTUM Asch. & Graeb. [2372]. Sandy Shore, E. Mersea, Essex, G. C. BROWN. Det. A. THELLUNG.

2919. BOTRYCHIUM MATRICARIAE (Schrank) Spreng. Syst. iv., 23, 1827. *B. rutaceum* Swartz 1801 non Willd. 1810. *B. matricariodes* Willd. 1810. *B. rutaefolium* A.Br. 1843. *Osmunda Matricariae* Schrank Baier. Flora ii., 419, 1789. Native. Grassy ground, Parish of Strachan, Kincardineshire (as *B. Lunaria* Sw.) T. Sim, July 1872, ex herb *Rev. H. E. Fox*, M.A., now in *Hb. Druce*. Rhizome short, with fascicled rootlets. Scottish plant, about 8 cm. high, with a rather thick green sterile leaf, rising from near the stem-base. Stem clothed with a few white hairs. Petiole semi-cylindric, limb small, somewhat curved, triangular, and as broad as long, 2-3 pinnatisect, pinnules elliptic, short, unequal at base, crenulate-dentate, segments sub-pinnatilobed, with few teeth. Fertile frond small, longly pedunculate, 3-4 pinnatisect, longer than the sterile frond. The Scottish plant comes under the var. MONTANA (Milde *Fil.* 200) Rouy Fl. Fr. xiv., 466, which is a smaller plant with the fertile frond less pedunculate and therefore not very much longer than the sterile frond. *B. Matricariae* may be distinguished from *Lunaria* by its compound broadly-triangular frond. *Lunaria* even in its more incised form has a narrower outline. The distribution of *B. Matricariae* is Scotland, Scandinavia, Denmark, France—Haute Savoie, etc., Germany, Czecko-Slovakia, Austro-Hungary, Serbia, Russia, Siberia, Japan, Unalaska, North America—Labrador, Newfoundland, Wisconsin, Vermont. *B. ramosum*, an allied plant with which *Matricariae* has been much confused (as is shown by the synonymy) differs essentialy in the barren fronds springing from the stem above the middle, not as in *Matricariae*, from the base. *B. ramosum* (Roth) Ascherson Fl. Brandenberg i., 906, 1864 = *B. rutaceum* Willdenow Sp. Pl. v., 62, 1810, non Swartz = *B. matricariaefolium* A.Br. occurs in Northern and Central Europe and North America. It may be remembered that Mr Whitwell (*Journ. Bot.* 291, 1898) mentions that *Botrychium matricariaefolium* A.Br. was given him by Dr. O. St Brody under the name *B. rutaceum* Swartz as having been gathered by him on the sandy sea-shore of Stevenston, Ayrshire, in July 1887. Whitwell says it agrees perfectly with the figure given by Newman (*Phyt.* v., 133, 1854). This has never been confirmed; nor has the supposed *B. lanceolatum* Angst. from the Sands of Barry, Forfar. It should be added that the Strachan specimen is not complete, and the identification is therefore not absolutely certain.



BOTRYCHIUM RUTACEUM SW.

[illegible]

SUPPLEMENT TO REPORT OF BOTANICAL SOCIETY AND EXCHANGE CLUB FOR 1926.

MENTHAE BRITANNICAE.

By John Fraser.

MENTHA L.

Perennial, strongly-scented, aromatic herbs, creeping by means of stolons, which perpetuate the plant, the old rootstock dying within twelve months. Flowers small, produced in verticils of many individuals, the verticils densely arranged and spicate or capitate, or ± widely separate and verticillate. Bracts subulate or large and foliaceous; bracteoles small and numerous, or reduced to four in *M. Pulegium*. Calyx tubular or campanulate, ribbed, 5-toothed, glabrous within or closed with hairs in *Pulegium*. Corolla campanulate, four-lobed, the upper lobe broader and emarginate. Stamens 4, erect, distant, equal, exserted or imperfect and included. Nutlets small, smooth.

I. Calyx glabrous within.

A. Inflorescence spicate; leaves sessile or subsessile; pedicels and calyx hairy.

Mentha rotundifolia Huds. Fl. Angl., p. 221 (1762). Stem erect, simple or more often branched from the middle upwards, and in that state giving the impression of a leafy panicle, ± densely covered with loosely reflexing, white hairs; internodes 2-4 cm. long. Leaves varying from oblong to ovate or subrotund on the same stems, subcordate at the base, rounded at the apex or terminated by a minute cusp, crenate or dentate, with a minute cusp to some of the teeth, rugose above and often on both faces when dried, pubescent above, tomentose beneath, but much more thinly hairy on both faces when growing near the water edge of rivers, and in gardens; superficies 2-4 × 1.5-3 cm.; teeth 0.25-1 mm. deep. Spikes dense, falcate when young, short, ± interrupted at the base, 3-5 cm. long. Hairs on the pedicels deflexed. Calyx hairy all over. Corolla hairy externally, pale pinkish purple, sometimes white in gardens. Stamens usually exserted.

Herb strongly fragrant, and known as Apple-scented Mint in gardens. River Towy, Carmarthen; Pennar, Pembroke, 1885, *J. Fraser*; between King's Newton and Ingleby, Derby, 1901, *A. B. Jackson*.

× Mentha cordifolia (Opiz) Fraser. *M. cordifolia* Opiz Natural. brertes berzeichnis (1823), p. 59. *M. crispa* Fürnrohr. *M. crispa* Lejune. non *M. crispa* Linn. (*M. rotundifolia* × *spicata*.) Stems stout, erect, 1½-3 ft. high, thinly and shortly pilose, simple or freely branched from near the ground, with short, ascending branches, very vigorous in cultivation, late in starting; internodes 3-5 cm. long. Leaves cordate, subsessile, or cordate-ovate in cultivation, strongly rugose, unequally cuspidate-serrate, slightly undulate at the margin, sparsely pilose on the veins beneath, otherwise subglabrous, those on the branches cordate-oblong, all acute, cuspidate; superficies 2-7 × 1.5-4 cm.; serratures mostly directed forward, acute or cuspidate, 0.5-2 mm. deep; petioles, when present, thinly pilose. Primordial leaves at first subrotund, then oblong, very shallowly crenate-serrate, rounded at the end; petioles 1-4 mm. long. Spikes solitary or densely crowded at the top of the stem, very stout, tapering upwards, curved outwards when young, interrupted at the base, 2.5-4.5 cm. long. Lowest pair of bracts lanceolate, with a few subulate teeth, the rest linear-lanceolate, with setaceous points, ciliate, completely hidden during anthesis. Pedicels and base of calyx glabrous; calyx teeth shortly ciliate. Corolla pale, whitish pink. Stamens exserted; anthers purplish red.

Waste ground, Swanage, Dorset, 1914, *C. B. Green.*

Forma angustifolia Fraser. In 1922, a root of the above plant gave rise to a sport, like a reversion towards *M. spicata*. The leaves are 3-7 × 0.5-2 cm. in superficies, and are rather more pilose than the parent.

Var. dourensis Fraser. (*M. rotundifolia* × *spicata*.) In most respects similar to × *M. cordifolia*, but the young stems and leaves are tinted with purple. The serratures of the leaves are more slender, sometimes subulate and 0.5-3.5 mm. deep. The spikes are more slender, more interrupted at the base, and 4.5-9.5 cm. long. The corolla is purple, with occasionally exserted stamens, and anthers reddish purple.

This hybrid was known to Linnaeus and Smith, the latter placing it under *M. viridis*, as a variety, but he had not seen it wild in Britain.

The Dour Burn, New Aberdour, N. Aberdeen, 1915, *J. Fraser.*

Var. brevifolia Fraser. (*M. rotundifolia* × *spicata*.) Stem rather slender for this group, branched from the base, with short ascending branches, glabrous or with an occasional few, solitary, scattered hairs, 12-18 in. high; internodes 2-4 cm. long. Leaves oblong, subcordate and often rounded at the base, acute, cuspidate, acutely and irregularly serrate, with a few, solitary hairs on the nerves beneath, otherwise glabrous, finely rugose, bright green, subsessile (petiole 1-2 mm. long); superficies 2-4 × 1.5-2.7 cm.; serratures 0.25-1.75 mm. deep. Spikes cylindrical, interrupted at the base, dense, about 3 cm. lengthening to 5 cm. with age, when the verticils become separated by short intervals. Lowest pair of bracts lanceolate, with a few serratures, the rest linear-lanceolate, with setaceous points, shorter than the flowers, shortly ciliate. Pedicels and base of the calyx glabrous, glandular; calyx teeth shortly ciliate with white setae. Corolla pale purple. Stamens exserted; anthers reddish purple.

The above plant very nearly agrees with *M. affinis* Opiz. but differs in the leaves being distinctly rugose, in the leaves of the branches being of the same shape as those on the stem, but smaller. This, as well as some other slightly varying forms of the hybrid were known to Ray, who made species of them. Smith placed them as varieties under *M. viridis*, var. β; and Hudson put them under *M. longifolia*. They are grown in many Surrey gardens for Mint Sauce and Pea Mint. Outcast on Abrook Common, Surrey, 1922, *J. Fraser*.

MENTHA LONGIFOLIA Huds. Fl. Angl., p. 221 (1762). *M. sylvestris* L. Sp. Pl. 864. Stem erect, simple or branched from the middle upwards, according to the degree of crowding or otherwise, thinly hairy below, densely hairy above, with closely deflexed or retrorse hairs, 2-3 ft. high; internodes 1.5-5 cm. long. Leaves narrowly or broadly lanceolate, or some of the lower, larger ones lanceolate-oblong, acute or shortly acuminate, sessile or subsessile, sharply serrate, ± hairy above, the upper ones more densely so, and green, the lower surface grey with adpressed hairs, even or sometimes finely rugose, especially when young; superficies 3-8 × 1-3 cm.; serratures mostly directed forward, but some of them salient, and concave on the lower side, 0.25-2 mm. deep. Primordial leaves in May thinly hairy and green. Spikes cylindrical, tapering upwards, dense while in bloom, but as the corollas drop, the verticils in turn become separated, so that the length varies from 3-10 cm., and the spike is then slender. Pedicels and calyx hairy. Corolla hairy without, glabrous within. Stamens exserted.

Long, narrow leaves and slender spikes are the best evidence of this species. The specimen in the Linnean herbarium shows a slender plant, which I can match with an outcast on Ranmore Common, Surrey, 1916. The hairs on all parts of the herb are long, slender, jointed and branched. Applashaw, N. Hants, 1917, *Hon. Mrs Baring* and *G. C. Druce*; Surrey, 1917, *Lady Davy* and *G. C. Druce*; Walton-in-Gordano, N. Somerset, 1925, *J. W. White*; Gomshall, Surrey, 1925, *J. Fraser*.

Var. PULVERULENTA (Strail). Class. et. Descr. "Menth. en Belgique." p. 78. Leaves broadly lanceolate, acute, sessile, slightly subcordate at the base sharply but not deeply serrate, thinly and shortly hairy above, with a powdery or mealy appearance, due to the pedestals or lowest joints of the hairs being brought into prominence by the shedding of the upper joints, lower surface distinctly more hairy, pilose on the principal nerves and whiter.

The variety corresponds to the mealy-leaved *M. Nicholsoniana*, under *M. niliaca*. Banks of the R. Darenth above Farningham, W. Kent, 1894, *E. S. Marshall*.

Var. WEINERNIANA Briq. *M. Weinerniana* Opiz. *M. florida* Opiz, not Pausets. *M. Wondracekii* Opiz. Stem erect, 2-3 ft. high, branching, thinly hairy below, more densely hairy above; internodes 2-5 cm. long. Leaves broadly lanceolate, shortly acuminate, sessile or subsessile, subcordate at the base on the main axis, rounded on the branches, green and hairy above, grey tomentose beneath; superficies 3-8 × 1-3 cm.; serratures small, acute, 0.25-2 mm. deep. Spikes cylindrical, dense, interrupted below. Near Marcham, Berks, *G. C. Druce.*

Var. ALPIGENA (A. Kern.) Briq. (1913). Stem erect, 2-3 ft. high, branched towards the top, rather thickly covered with short, sharply retrorse hairs; internodes almost regularly 4 cm. long. Leaves lanceolate, widest about the middle, acuminate, sharply and rather irregularly serrate, sessile and subcordate at the base, green above and rather closely covered with short, adpressed hairs, beneath tomentose or felted and whitish; superficies 5-8.5 × 1-2 cm.; serratures 0.25-1.5 mm. deep. Spikes *short*, very stout, oblong, tapering slightly, dense, interrupted at the base, 3.5-4.5 cm. long, when in flower. Bracts setaceous, plumose, all longer than the corolla when in bloom. Corolla hirsute without; stamens included.

I have consulted Strail's description of *M. veronicaeformis* Opiz, in Déséglise Menthae Opizianae II., p. 27 (1882), to which var. *alpigena* has been compared; but Strail's description states that *M. veronicaeformis* Opiz has leaves only up to 5.5 cm. long, and they are *crowded* on the stem, whereas those of var. *alpigena* are distant from one another. The lowest bracts equal the verticils after anthesis, and the others are shorter than the verticils. The stamens are exserted. This should be a very different Mint from A. Kerner's plant. The only specimen to hand was gathered near Kirkinner, Wigton, 1912, by G. C. Druce.

× MENTHA NILIACA Jacq. Hort. Vindob. III., p. 46, t. 87 (1776-1777). (*M. longifolia* × *rotundifolia.*) Stem stout, erect, freely branched, with slender, sharply ascending branches, moderately densely villous with loose hairs below, but closely covered with sharply deflexed or retrorse hairs above, 2-3 ft. high; internodes 3.5-6 cm. long. Leaves narrowly ovate, gradually narrowed from near the base to a long, acuminate, very acute point, sessile, cordate at the base, sharply serrate, thinly hairy with very short hairs above and dark green, under surface grey tomentose with short hairs, but pilose on the principal nerves with hairs of medium length, ± netted with sunk veins on both faces; superficies 3.5-7.5 × 1.5-2.5 cm.; serratures very numerous, directed forward, irregular in size and spacing, but never very deep (0.25-2 mm., average 1 mm.), acute; leaves of the branches lanceolate, otherwise like those of the stem. Spikes cylindrical, very dense, 3.5-4 cm. long, the lateral ones close under the main spikes, nearly horizontally patent. Bracts setose, plumose, slightly longer than the open corolla. Pedicels villous with 3-5 jointed, loosely reflexing hairs. Calyx villous; teeth lanceolate, very slender, ciliate with 2-6 jointed hairs. Corolla pale lilac-purple. Stamens included, rarely exserted.

This hybrid Mint lies between the vars. *mollissima* and *sapida* with similarly shallow serratures, and like them has spikes ± round about an inch long, relatively slender, not interrupted, and the upper surface of the leaves is dark green. The leaves are also far more attenuate at the apex than either, and very different in appearance. It heads the list in this group of hybrids because the oldest described. Near Abingdon, Berks, 1926, *G. C. Druce.*

Var. NEMOROSA (Willd.) (*M. longifolia × rotundifolia.*) Stems stout, simple or more often branched, with short, ascending branches, thinly hairy below, especially in watery ditches, densely hairy above with ± closely deflexed or retrorse hairs, 2-3 ft. high; internodes 2-6 cm. long. Leaves oblong, or ovate-oblong (lower ones), acute, cuspidate to shortly acuminate, subcordate at the base, sharply, deeply, and irregularly serrate, *short and broad*, thinly and shortly hairy, sometimes nearly glabrous and green above, beneath thinly to densely hairy, or thinly felted in dry situations, sessile or the lower ones shortly petiolate (up to 5 mm.); superficies 3.5-8.5 × 1.5-4 cm.; serratures directed forward, or some of them salient, and concave on the lower side, 0.5-3 mm. deep. Primordial leaves in May oblong, rounded at the end to obtusely pointed, subentire or shallowly serrate, subglabrous, light green. Spikes cylindrical, dense, interrupted below, 3-8 cm. long. Pedicels densely covered with deflexed hairs, calyx covered with ascending adpressed, grey hairs. Stamens included, rarely exserted.

The features of this hybrid are the *short, broad oblong* leaves, more or less netted with *sunk veins* on one or both faces, and the functionally *female* flowers. It is the most common of the forms in Britain usually placed under *M. longifolia* as a variety, and varies greatly in appearance in different places, but it would serve no useful purpose to seggregate and describe forms. Holyhead, Anglesey, 1917, Beaumaris, Anglesey, 1919, Marston, Oxon, 1919, Ellesborough, Bucks, 1896, Wolvercote, Oxon, 1912, Yarnton, Oxon, 1913, Brickhill, Bucks, 1902, Branstock, Cornwall, 1908 (stamens exserted), Cothill, Berks, 1893 (stamens exserted), all by *G. C. Druce;* Penzance, W. Cornwall, 1875, W. Curnow (stamens exserted); Llwydcoad, Glamorgan, *H. J. Riddelsdell;* between Kimble and Ellesborough, Bucks, 1911, *F. L. Foord-Kelcey;* The Lythe, N. Riding, Yorks, 1882, *C. E. Palmer;* R. Wandle, Croydon, 1878, *A. Bennett;* Marston Montgomery, Derby, 1897, *H. Bromwich;* Galashiels, Selkirk, 1913, *G. C. Druce* and *I. M. Hayward;* Wargrave, Berks, 1901, *G. Stanton;* R. Tay, below Perth, 1871, *H. M. Drummond-Hay;* Coleford, Gloucestershire, 1869, *Dr H. Brody;* Newland, W. Gloucester, 1910, *Charles Bailey;* near Malvern, Worcester, *Wall;* Eynsford, Kent, 1881, *James Groves;* R. Chew, N. Somerset, 1887, *J. W. White;* Slateford, Edinburgh, 1920, *James Fraser;* Peterston super Ely, Glamorgan, 1921, *A. E. Wade;* Carbrook Fen, W. Norfolk, 1914, and Marham, W. Norfolk, 1921, *F. Robinson*; Nutfield Marsh, 1916, and Reigate Heath, Surrey, 1925, Smeeth and the Potteries, Aylesford, E. Kent, R. Medway above Maidstone, and Leybourne, W. Kent, 1919, *J. Fraser.* Of 34 sheets, only three had exserted stamens.

Var. NICHOLSONIANA (Strail). (*M. longifolia × rotundifolia.*) Stems 1½-2½ ft. high, stout, erect, simple or freely branched from the middle upwards, with short, ascending branches, and ± densely covered with short, sharply deflexed hairs. Leaves oblong to ovate-oblong, *short*, acute, cuspidate, or the uppermost shortly acuminate, sessile, or the lowest on the main axis and on the branches shortly petiolate, subcordate at the base, sharply and irregularly serrate, *shortly hairy on the upper surface, exposing the large basal joints of the hairs*, and giving the leaf a *mealy appearance*, under surface thinly to densely hairy or thinly felted, ± netted with sunk veins. Spikes stout, cylindrical, dense, 3-8 cm. long, ± interrupted at the base. Stamens included.

The above characters largely repeat those of the var. *nemorosa*, so that the *mealy pubescence* of the upper and to a lesser extent the under surface constitutes the most decisive feature of this variety. Comments have been made that the specimens from Three Cocks Junction had long bracts to the flowers, but those specimens were not fully in bloom; and that the leaves should be petiolate, but that applies only to the lower leaves of the main axis and to those of the branches. The latter character applies to *M. longifolia* itself and even to *M. spicata*, as well as the hybrids of the former. R. Wye, Whitney, Hereford, 1889. R. Wye, near Hereford, 1899. Three Cocks Inn, Brecon, 1907, all by *Augustin Ley;* Whitney on Wye, *Walter W. Reeves* and *M. Dawber*, both in 1890; Newland, Forest of Dean, W. Gloucester, 1910, and Glen Lea, Hindhead, Surrey, 1905, *Charles Bailey;* R. Wye, Symond's Yat, 1900, Crickhowell, 1908, Broughrood, Radnor, 1908, Scampton Hall, Yorks, 1916, *G. C. Druce;* Canton, Cardiff, Glamorgan, 1922 and 1923, *R. L. Smith*.

Var. MOLLISSIMA (Borckh.). (*M. longifolia* × *rotundifolia*.) Stem stout, erect, simple or branched for the greater part of its length, with short, ascending branches, rather thickly covered, with short, retrorse closely adpressed hairs, 1½-2½ ft. high; internodes 4-6 cm. long. Leaves oblong, suddenly narrowed to a cuspidate, obtuse or acute point, sessile or subsessile, sometimes with a petiole 2-3 mm. long on the small, lanceolate leaves of the branches, sharply serrate, *grey-green above* and closely covered with very soft closely adpressed pubescence, beneath *more densely felted*, *grey and soft*, ± lined or netted with sunk veins on both faces; superficies 3-8.5 × 1-2.5 cm.; serratures 0.25-2 mm. deep. Spikes short cylindrical, slightly tapered upwards, curving outwards when young, sometimes interrupted at the base, rather stout, 2.5-4.5 cm. long. Pedicels covered with fine woolly hairs. Calyx with adpressed hairs; teeth long, slender. Corolla purple, hairy without. Stamens usually included.

The leaves of this hybrid are relatively longer and narrower than those of var. *nemorosa*, more uniformly oblong, and the indumentum is of a blue-grey tone and very soft to the touch, which characters serve to distinguish it. Baildon, Mid-west Yorks, 1917, and Hawkesworth, Mid-west Yorks, 1925, *John Cryer;* Stow Bedon, W. Norfolk, *E. M. Reynolds*, 1917 (stamens exserted in this).

Var. VILLOSA (Huds.) *M. villosa* Huds. Fl. Angl. ed. 2, p. 250 (1778). (*M. longifolia* × *rotundifolia*.) Stem erect, simple or branched from the middle upwards, with ascending branches, stout, clothed with ± loosely deflexed hairs, thin below and dense above, 2-3 ft. high; internodes 3-4.5 cm. long. Leaves oblong to ovate-oblong, acute, or more often suddenly narrowed to a small cusp, sessile, cordate at the base, sharply and irregularly serrate, densely covered with short hairs above, and rugose, beneath densely covered with a whitish-grey tomentum, and when dry, ± furrowed and netted on both faces with sunk veins; superficies 3.5-8 × 1.5-4 cm.; serratures directed forward, some salient and concave on the lower side, 0.5-2 mm. deep. Primordial leaves varying from subrotund to oblong, shallowly serrate, nearly glabrous, shortly petiolate. Roots from a wild habitat in the garden shed much of their hairs at the joints on both sides of the leaves, till the upper surface shows a mealy pubescence, much like that in the var. *Nicholsoniana*. Wild plants sometimes behave in the same way. Spikes stout like a fox's tail, and curved outwards when young, later elongated, cylindrical, interrupted at the base, 3.5-6.5 cm. long. Bracts subulate, hirsute, completely hidden during anthesis. Corolla pale purple, hairy. Stamens shorter than the corolla or equalling it, very rarely longer than it.

Comparable to the var. *nemorosa*, this has much broader, more strongly rugose, and darker green leaves, more densely tomentose beneath. The leaves vary immensely in size, according to the soil and moisture, even in the same habitat. Near Freeland, Oxon, 1916. Thames banks, Ilsley, Berks, 1895, Levenwick, Zetland, 1924, W. Ross, 1926, *G. C. Druce*; Gt. Henny, N. Essex, 1916, *J. Higgins*; near Woodhouse Eaves, Leicester, 1895, *F. T. Mott*; Little Brickhill, Bucks, 1897, *G. C. Druce*; near Stevenage, Herts, 1846, *W. H. Coleman*; Sherard's Green, Malvern, Worcester, 1923, *T. J. Wall*; Legaston Quarry, near Arbroath, 1912, *R.* and *M. Corstorphine*; Stradsett, W. Norfolk, 1833, *A. B.* (specimens in bloom only 6 in. high); Basset near Eastleigh, S. Hants, 1921, *Emily S. Todd* (two sheets from a dry roadside with exserted stamens!); near Virginia Water, Surrey, 1925, *J. Fraser*; Norfolk, 1913, *Miss Trower*. This specimen has lost the leaves of the main axis, the branches are very numerous, slender, bearing small nearly glabrous leaves, the spikes are elongated, with verticils all separated, and the bracts lanceolate to ovate and leafy. I think this has been growing in a spot frequented by poultry, and too much nitrogen in the soil has made growth abnormal.

Var. SAPIDA (Tausch) Briquet (1891). *M. sapida* Tausch, ex Reichb. Fl. Ger. Excurs. p. 310 (1830), with syn. *M. Halleri* Gmel. *M. villosa* Huds., var. *sapida* (Tausch) Briquet (1913), in Bot. Ex. Club, 1913, p. 332. (*M. longifolia* × *rotundifolia*.) Stem stout, erect, simple or branching for the greater part of its length, with short, ascending branches, rather thinly hairy towards the base, densely covered for the greater part of its length with loosely deflexed white hairs, bearded at the nodes, 2-5 ft. high; internodes 4-6.5 cm. long. Leaves cordate-elliptic, subsessile, acute, cuspidate or shortly acuminate, shallowly serrate on the lower leaves, a little more deeply and irregularly serrate on the upper leaves, blue green on the upper face, and ± densely covered with adpressed pubescence, grey-white beneath and densely tomentose with long, white, jointed, branched and interlacing, woolly hairs, soft to the touch on both faces, ± netted and furrowed with sunk veins beneath; superficies 5-10 × 2-4.5 cm.; serratures mostly directed forwards, 0.25-1.5 mm. long. Primordial leaves large, green, rather thinly hairy. Spikes cylindrical, stout, very dense, 3-5.2 cm. long (Tausch says "flores et verticilli minimi"). Bracts setaceous, plumose, completely hidden during and after anthesis. Corolla pale purple, hairy. Stamens included, very rarely exserted. Calyx hairy. Pedicels enveloped in long, reversing, interlacing, jointed, woolly hairs, perhaps the most woolly pedicels of any Mint.

The above is the most striking and splendid Mint when seen in its best form. Jean Briquet says "forma valde lanigera;" and if that woolly character be borne in mind, as well as the large, cordate-elliptic leaves, the shallow serratures, and the short dense spikes of small verticils, there should be no difficulty in recognising this Mint by whatever name it is called. Mouth of the R. Whiteadder, near Berwick-on-Tweed, 1870, *P. N. Maclagan* (under the name *M. sylvestris* L.); Glen Ogilvie near Glamis, Forfar, 1896, *T. Drummond* (*M. sylvestris* L., var. *mollissima* (Borckh.)); Brodie Burn, near Forres, Moray, 1898, *W. A. Shoolbred* and *E. S. Marshall* (*M. candicans* Crantz?); Dunbarney, near Perth, 1906 (*M. longifolia* Huds., var. *mollissima* (Borckh.?)), Glen Ogilvie, Forfar, and the South Esk, Bridge of Dun, Forfar, 1912, *G. C. Druce* (*M. longifolia* Huds. var., and determined by Briquet to be *M. villosa* Huds., var. *sapida* (Tausch) Briq. 1913); Glen Ogilvie, Forfar, 1926, *R.* and *M. Corstorphine* (the best specimens I have seen).

Var. ALOPECUROIDES (Hull) Briquet (1894). *M. alopecuroides* Hull Brit. Fl. I., 126 (1799). *M. rotundifolia* Sole Menth. Brit. p. 9, t. 4 (1798). (*M. longifolia* × *rotundifolia*). Stem very stout, erect, simple or branched from near the base upwards, rather thinly hairy below, more densely so upwards, with ± loosely reflexed hairs, bearded at the nodes, 2-5 ft. high; internodes 2-6 cm. long. Leaves broadly oblong, sessile, cordate at the base, the uppermost roundly cordate, all rounded at the end, coarsely serrated, terminating in a short, cuspidate tooth, rugose, thinly and shortly hairy and dark green above, beneath villous or occasionally thinly felted, but never white; superficies 3-9×2-6.5 cm.; serratures rather irregular, mostly directed forward, with a few salient ones, concave on the lower side, 1-4 mm. deep. Spikes stout, obtuse, somewhat curved outwards when young, dense, occasionally interrupted at the base, 3-5.5 cm. long, lengthening to 8 cm. after flowering when the verticils become slightly separated, and 1-20 in number in a terminal panicle, according to the vigour of the plant. Bracts setaceous, shortly hairy, completely hidden during anthesis. Pedicels covered with loosely reflexing hairs. Calyx shortly hairy. Corolla rosy-purple, hairy without. Stamens included or a few shortly exserted.

Recognisable by its stout stems, large, shortly and broadly oblong, or subrotund, rugose, coarsely serrated leaves, villous beneath. Often cultivated in cottage and villa gardens, from which the long and very vigorous stolons get thrown out and run wild. Gomshall and Dunsfold Green, Surrey, 1925, *J. Fraser*; near Rescobie, Forfar, 1913, *R.* and *M. Corstorphine*; Symond's Yat, W. Gloucester, 1926, *Mrs Wedgwood*.

* **Inflorescence spicate; leaves stalked; pedicels and calyx hairy.**

× **Mentha hircina** (Hull) Fraser. *M. hircina* Hull Brit. Fl. I., 127 (1799). *M. piperita sylvestris* Sole Menth. Brit. p. 53, t. 24 (1798). *M. pubescens* auct. pl. (*M. aquatica* × *longifolia.*) Stem erect, simple or branched, with short, ascending branches, rather thinly covered with closely deflexed hairs; internodes 2.5-4.5 cm. long. Leaves oblong, obtuse, to acute or cuspidate, petiolate, rounded at the base or very shortly cuneate, finely and almost regularly serrate, green above and thinly strewed with short closely adpressed hairs, rather more densely hairy beneath, with very short hairs and shortly pilose on the principal nerves, the uppermost pair of leaves short and ovate; superficies 3.5-7 × 1.8-2.8 cm.; serratures 0.25-1 mm. deep; petioles 2-7 mm. long. Spike oblong, obtuse, interrupted at the base, 2.7 cm. long. Lowest pair of bracts lanceolate, leafy with a few serratures, the rest linear-lanceolate to setaceous, about as long as the open flowers, rather shortly hairy and ciliate with white hairs. Pedicels covered with closely retrorse hairs. Calyx and long teeth wholly covered with short, ascending, curled hairs. Corolla very hairy without. Stamens included.

The above description is drawn up from a specimen in the herbarium of Dubois, and gathered by Mr Stonestreet. It is characteristic of four other sheets in the same herbarium, with rather larger specimens and larger leaves. The modern specimens being collected for *M. hircina* Hull are all too hairy for this plant, and are the next variety.

Var. **hirsuta** Fraser, var. nov. (*M. aquatica* × *longifolia.*) Stem stout, erect, simple or more often branched, with short, ascending, flowering branches, shaggy with loosely recurving, white hairs, 2-2½ ft. high; internodes 3.5-4 cm. long, on wild plants in exposure, but in shady places, or in cultivation 5.5-6.5 cm. long. Lower leaves oblong, obtuse or acute, cuneate or rounded at the base, upper ones lanceolate, all sharply and irregularly serrate, with occasional denticles between the larger ones, *densely hairy above, tomentose beneath*, pilose on the nerves, with long hairs; superficies 3.5-5 × 1.4-2.3 cm.; in wet or shady places, and in cultivation the superficies mounts to 6-8.5 × 2.5-3.3 cm.; serratures mostly directed forward, but some are salient and concave on the lower side, 0.5-2 mm. deep. Spikes oblong, obtuse, stout, ± interrupted at the base, and on strong specimens there are frequently a pair of pedunculated spikes from the uppermost pair of leaves. Bracts lanceolate to setose, hirsute with long white hairs, shorter than the flowers, and one to two lower pairs may be large and leafy. Pedicels very hirsute with loosely deflexed white hairs. Calyx wholly hairy. Corolla purple, hairy without. Stamens included, seldom exserted and then without pollen.

Roadside at Bayford, Herts; damp, grassy lane, Weston-in-Gordano, N. Somerset, 1919, *Ida M. Roper* and *C. Bucknall*, and 1924, *James W. White;* The Dour Burn, New Aberdour, N. Aberdeen, 1915, *J. Fraser*. Cultivated plants of the last named look grey while growing, but the stems and leaves have shorter hairs than the wild plants, so that the long, straight hairs on the nerves of the lower face become very prominent.

×**Mentha palustris** (Sole) Fraser. *M. palustris* Sole Menth. Brit. p. 13, t. 6 (1798). (*M. aquatica × longifolia.*) Stem erect, simple or branched, with short, ascending branches, shaggy with loosely reflexing hairs, 2-3 ft. high; internodes 3-4.5 cm. long. Leaves ovate, or the lower ones broadly oblong, subcordate at the base, obtuse to acute, or cuspidate, petiolate, rather finely and acutely serrate, green above and rather densely hairy, tomentose beneath, and pilose on the nerves; superficies 2-4 × 1.5-2.5 cm.; serratures directed forward, 0.5-2 mm. deep; petioles 3-7 mm. long. Spikes oblong, obtuse, interrupted at the base, with the lowest verticil of strong stems pedunculated. Bracts lanceolate to setose, hirsute, shorter than the flowers, or the two lowest pairs leafy and longer. Pedicels and calyx hirsute. Corolla pale purple, hairy. Stamens included.

Newlyn, Cornwall, *A. Bennett;* Chyoogue, Perranarworthal, Cornwall, 1911, *Fred. Hamilton Davey.*

** Inflorescence spicate; leaves sessile; pedicels and base of calyx glabrous except in ×*M. Nouletiana.*

×**Mentha villoso-nervata** (Opiz) Fraser. *M. villoso-nervata* Opiz Natural. brertes berzeichnis (1823) p. 60. *M. viridis* Bœnninghausen herb. *M. viridi-sylvestris?* re Malinvaud. (*M. longifolia × spicata.*) Stem stout, erect, branched, with ascending branches, ± villous with loose, curled hairs; internodes 2-4 cm. long. Leaves oblong, sessile or subsessile, subcordate at the base, or those on the branches lanceolate and rounded at the base, acute or having a longish entire point, acutely, unequally serrate, glabrous above or with a few scattered, adpressed hairs, villous or pilose on the nerves beneath, slightly rugose (subplanis), with sunk veins above when dry; superficies 3-7.5 × 1.2-2.5 cm.; serratures mostly directed forward, often incurved at the points and 0.25-2 mm. deep. Spikes cylindrical, interrupted at the base, 2-3.5 cm. long. Pedicels and base of the calyx glabrous, glandular, glands of the former pin-headed; calyx teeth ciliate with long, 2-4 jointed hairs. Bracts setaceous, hirsute, with 3-6 jointed hairs. Corolla purple. Stamens included.

This certainly looks more like *M. spicata*, when seen growing, than the other supposed parent, though the hairiness of the stems, leaves, bracts and calyx teeth suggest hybridity. Near Lostifield, Wonersh, Surrey, 1894, *S. T. Dunn;* Friday Street, Surrey, 1926, *J. Fraser.*

×**M. Nouletiana** Timb.-Lagr.? (*M. longifolia × spicata.*) Stem fairly stout, erect, branched above the middle, ± villous throughout, with reflexing curled hairs of medium length; internodes 2.5-6.5 cm. long. Leaves oblong-elliptic, sessile, subcordate at the base, with a long, cuspidate, entire, acute point, deeply and sharply serrate, rather densely pubescent above with very short hairs that expose the green surface, dull grey and felted beneath; serratures directed forward, very irregular in size and spacing, many of them salient or spreading widely, triangular at the base, with a subulate, acute, often incurved tip, 1-3.5 mm. deep; superficies 3.5-7 × 1.8-2.5 cm. Spike slender, much interrupted, cylindrical, with small, dense verticils, 4-6 cm. long. Bracts setaceous, plumose, the lowest two pairs longer than the verticils, the rest equalling the corolla when open. Pedicels, calyx, and calyx-teeth shaggy with 3-6 jointed, woolly-looking hairs. Corolla pale, with violet-purple centre to each lobe. Stamens included.

The main features of this hybrid are the oblong-elliptic, very deeply serrate leaves, and the slender, much interrupted spikes on the main axis and branches. It is much nearer *M. longifolia* Huds. than to *M. spicata* Huds. The slender, much interrupted spikes are the chief evidence of the latter. *M. nemorosa* sometimes has very deep serratures, and the woolly character of the hairs of all parts of this plant indicate a close relation to it. × *M. villoso-nervata* is very much closer to *M. spicata* in all parts. Montpelier, Belfast, Co. Antrim, 1926, *Jas. W. White*.

MENTHA SPICATA Huds. Fl. Angl. p. 221 (1762). *M. spicata*, var. *viridis* L., 1753. *M. viridis* L., 1762. Stem erect, simple or more frequently branched, glabrous, 2-2½ ft. high; internodes 2-5.5 cm. long. Leaves lanceolate or oblong-lanceolate, acute to acuminate, sessile or subsessile (petioles often 1-3 mm. long), serrate, glabrous on both faces; superficies 4-9 × 1.3-3 cm.; serratures acute, mostly directed forward, 0.25-2 mm. long. Primordial leaves short, oblong, rounded at the ends, very shallowly serrate, gradually giving place to the summer leaves. Spikes ± panicled on the top of the main axis, cylindrical, slender, narrowing to the apex, the verticils gradually becoming separated with age, and 3-6 cm. long. Bracts linear-setaceous, or the lowest pair lanceolate and leafy, longer than the flowers, but usually incurved, subglabrous or shortly ciliate. Pedicels and calyx-tube glabrous; calyx teeth subglabrous or with ciliæ of slightly varying length. Corolla purple, glabrous without and within. Stamens exserted, but variable in length.

Recognisable by the lanceolate, glabrous leaves, slender spikes and pungent smell. Field and hedge at the foot of Boxley Hills, E. Kent, 1919, near Fetcham, Surrey, 1920, *J. Fraser*. Spearmint is much cultivated and frequently an outcast from gardens.

Var. LACERATA (Opiz) Fraser. *M. lacerata* Opiz Naturalientausch, p. 60 (1831). *M. viridis β crispa* Benth. (1855 or earlier) non Linn. Stem 2 ft. to 2½ ft., stout, erect, glabrous, much branched; internodes 2-4 cm. long. Leaves ovate, cordate at the base, sessile, slashed, incised and serrate in a variety of ways, with long, acute and entire points, strongly rugose, glabrous on both faces; superficies 2-3.5 × 1.5-2.5 cm.; laceræ 2-8 mm. long; leaves of the branches lanceolate, with serratures and incisions 1-3.5 mm. long. Spikes cylindrical, dense, very freely produced, stout for *M. spicata*, elongating with age and becoming ± interrupted at the base, 3-6 cm. long. Bracts linear-setose, shortly ciliate, almost glabrous, hidden during anthesis. Pedicels and base of calyx glabrous; calyx-teeth with short hairs of 1-2 joints. Corolla purple, glabrous without. Stamens exserted, anthers reddish purple. Seeds abundantly produced.

Glenfarg, Perthshire, previous to 1855. Cultivated in Kew and Oxford Botanic Gardens. Opiz says of it, "Cultivated and run wild."

×Mentha crispa (L.) Fraser. *M. aquatica* L. ξ *M. crispa* L. Sp. Pl. ed. 2, p. 805 (1763) pro specie, ex H. Braun in Verhand. Geol.-bot. Gesells. in Wien (1890). *M. aquatica* L. β *crispa* Benth. (*M. aquatica* × *spicata*.) Stem simple or branched, with short ascending branches, ± hirsute with loosely reflexing hairs; internodes 3-4 cm. long. Leaves transversely and broadly oblong, subcordate at the base, subsessile, ± deeply slashed and incise-serrate, curled and rugose, thinly hairy on both faces; laceræ and serratures 2-6 mm. deep; superficies 1.8-2.7 × 2-4 cm. Leaves of the branches smaller, subcordate, deeply and sharply serrate. Spikes oblong, obtuse, tapering slightly; interrupted at the base, 2.5-5.5 cm. long. Bracts setaceous or the lowest pair leafy, ciliated with hairs of 3-4 joints. Pedicels and base of the calyx glabrous, or with an occasional hair of 1-2 joints on both; calyx-teeth ciliate with short hairs of 1-2 joints. Corolla purple, with a few setæ without. Stamens included.

The true Crisped or Curled Mint. Banks of the Wooler Water, Northumberland; Cammach Lane, near Settle, *John Tatham*. There has always been a difficulty in judging the affinities of this Mint. Smith thought it might be a variety of *M. viridis* or *M. piperita*. Bentham and Heinrich Braun made it a variety of *M. aquatica* L. It has the broad leaves, and the long calyx teeth of the last named, but the inflorescence is a spike somewhat resembling that of *M. hircina* Hull, rather than the capitate one of *M. aquatica*. The midrib of the leaves of the main axis has become separated into many bundles of vascular tissue, so that 10-20 slender nerves radiate from the base of the leaf. The pedicels and base of the calyx of the specimen in the Linnean herbarium appear more glabrous than in my specimens, and I have ventured to give the parentage as above.

*** Inflorescence spicate; leaves stalked; pedicels and base of calyx glabrous.

Mentha piperita L. Sp. Pl., 576. *M. officinalis* Hull Brit. Fl. i., 127 (1799). *M. piperita officinalis* Sole Menth. Brit., p. 15, t. 7 (1798). Stem erect, simple, or more often branched for two-thirds of its length, with short, ascending branches, reddish, very thinly hairy, more hairy under the nodes, with loosely reflexing hairs (in some counties of Britain somewhat more hairy plants occur); internodes 3-7 cm. long. Leaves lanceolate on wild plants, occasionally a few of the lower ones may be oblong, and a pair or two of the small uppermost ones ovate (on cultivated plants, most of the leaves may be ovate-lanceolate), acute, cuneate at the base, or the uppermost ones rounded, sharply serrate, dark green above, with a few scattered hairs, paler beneath with more numerous scattered hairs; superficies 3.5-8 × 1.5-3 cm.; serratures mostly directed forward, 0.25-2 mm. deep. Spikes oblong, obtuse, interrupted at the base, 1-3 of the lowest verticils pedunculate, 3.5-6 cm. long. Bracts lanceolate, thinly pilose and ciliate, about as long as the open flowers, or 1-2 of the lowest pairs large and leafy. Pedicels glabrous, with some stalked glands, purple. Calyx narrowly funnel-shaped, glabrous, very glandular in the furrows; teeth long, subulate, dark purple, rarely green, ciliate with rather long white hairs. Corolla pale purple, glandular, with a few, irregularly scattered, 1-2 jointed hairs without. Stamens included.

M. piperita is said by some botanists to be the hybrid *M. aquatica* × *spicata*, and the included stamens and 1-2 pairs of leafy bracts at the base of the spike, as well as the pungent smell, would favour this idea. The tendency of the leaves of cultivated plants to become short and ovate-lanceolate, the distinct petioles, and the hairs on the corolla indicate *M. aquatica*. The glabrous pedicels and base of the calyx, as well as the pungent odour, and warm aromatic flavour indicate *M. spicata*. Ditch near Boxley, Kent, 1919, R. Dochart, Killin, Mid Perth, 1899, Tigh na Circe Fraoich, near Glenogle Head, Mid Perth, 1905. The Dour Burn, New Aberdour, N. Aberdeen, 1915, *J. Fraser*; Emscote, near Warwick, 1897, *A. B. Jackson*; Middlewick Rifle Ranges, Colchester, 1925, *G. C. Brown*. All the above are the common or typical form, except the last named, which is more hairy.

Var. VULGARIS (Sole). *M. piperita vulgaris* Sole Menth. Brit., p. 19, t. 8 (1798). Stem erect, flexuous, reddish-brown, slightly hairy, much branched, 1-2½ ft. high; branches also flexuous. Leaves ovate, acute, decidedly cuneate at the base (Smith says "shorter [than in *M. piperita*] subelliptic"), petiolate, sharply serrate, with 9-12 serratures on each margin, thinly hairy; superficies 2.5-6×1.6-3.3 cm. Spikes shortly oblong, very obtuse, often subcapitate, especially on the branches, 2-2.5 cm. long. Bracts ciliate. Pedicels glabrous. Tube of calyx glabrous, sprinkled with glands; teeth ciliate. Corolla purplish-red. Stamens included.

The above description is drawn up from Sole's figure and partly from his text, which is by no means explicit or full. Watery places about Bath, between Wells and Glastonbury, and Chiltern Bottom, Wilts, *Sole*.

Var. DRUCEANA Briq., var. nov. (1894). *M. affinis* Strail. Stem erect, flexuous, branched, red, very thinly hairy, with short hairs, more numerous under the nodes, 2-2½ ft. high. Leaves varying from oval to ovate, smaller upper ones acute, petiolate, unequal and slightly *cuneate at the base*, the upper ones *rounded* at the base, dark green above, thinly hairy at first, soon glabrous above, pale green and thinly hairy on the nerves beneath; serratures 5-10 on each margin, 0.25-1.25 mm. deep, mostly directed forward, and 3-6 mm. apart. Spikes short, obtuse, interrupted at the base, often subcapitate on the branches. Pedicels and base of calyx glabrous; teeth ciliate. Corolla glabrous within. Stamens included.

The distinguishing features of the variety are the oval leaves of the main axis, slightly *cuneate at the base*, and the small number and small size of the serratures. Didcot, Berks, 1889 and 1891, *G. C. Druce*.

Var. **SUBCORDATA** Fraser, var. nov. Stems erect more or less flexuous, simple or more often branched, thinly and shortly hairy, with the hairs more numerous under the nodes, dark purple-red; internodes 2-7 cm. long, the longer ones due to plentiful moisture; branches ascending, flexuous. Leaves ovate to oblong-ovate on the same plants in different seasons, *subcordate at the base*, the upper ones *truncate or rounded* at the base, petiolate, acute, conspicuously hairy on both sides of the young leaves, but becoming thinly hairy or subglabrous above, thinly and shortly hairy all over beneath or only on the principal nerves; superficies 2-8.5 × 1.5-3.8 cm.; serratures 0.25-2 mm. deep. Spikes shortly oblong, very obtuse, most often interrupted at the base on the main axis; 1-2 of the lowest verticils often pedunculate. Bracts lanceolate, ciliate. Pedicels and base of calyx glabrous, but having stalked glands; teeth of calyx ciliate with 2-4 jointed white hairs. Corolla pale to deep purple, glandular, occasionally having a few, 2-jointed hairs. Stamens included, very rarely exserted on the same plants in different seasons.

This is certainly different from Sole's plant, according to his figure, and Smith's corroboration of the shape of the leaves. The var. *subcordata* is more remote from Sole's type than is var. *Druceana*. Earthcot, Alveston, W. Gloucester, 1921, *William Nelmes;* Mendip near Priddy, 1925, Walton-in-Gordano, 1925, and by the Upper Frome, at Gurney Slade, 1925, all in N. Somerset, *J. W. White*. There is another form of Sole's plant in cultivation, with narrow, oblong leaves and a subcordate base. I have handled it from two or more gardens.

B. Inflorescence capitate; leaves stalked.

MENTHA CITRATA Ehrh. Beitr. vii., 150 (1792). *M. odorata* Sole Menth. Brit., p. 21. t. 9 (1798). Stem erect, stout, simple or more often branched for two-thirds of its length, with short, sharply ascending branches, sprinkled with a thin scattering of short hairs, more numerous under the nodes, reddish in the early stages, green upwards, 2 ft. high; internodes 3-5 cm. long. Leaves subcordate, the lower obtuse, the rest gradually acute or cuspidate, petiolate, sharply serrate, covered on both faces with short, thinly scattered, adpressed hairs; superficies 3-8 × 2-5.5 cm.; serratures acute or cuspidate, mostly directed forward, often with a small denticle between the larger ones, 0.25-2 mm. deep. Inflorescence capitate, of 1-3 verticils, the lowest or all remote, and the lowest most often pedunculate; top verticil 1.5-1.8 cm. wide. Two lowest pairs of bracts leafy, the rest lanceolate to setose, thinly ciliate, with 10-12 hairs of 1-3 joints. Pedicels glabrous, with stalked glands or having 2-3 hairs of 1-3 joints as on the base of the calyx; calyx narrowly funnel-shaped; teeth long, ciliate with 10-12 hairs of 1-3 joints. Corolla purple showing a few 1-4 jointed hairs. Stamens included. Whole herb smelling strongly of *Monarda didyma.*

The above was drawn up from cultivated specimens that came originally from the edge of a pond, Northaw, Herts. The plant is more hairy than Smith's description would admit, but the hairs are very inconspicuous on calyx, pedicels and bracts, except under the compound microscope. Old records are edges of rivers and brooks, Cheshire, *Mrs Walmsley;* and Capel-Carey, North Wales, 1772, *Sole.*

MENTHA AQUATICA L. *M. hirsuta* Huds. Fl. Angl., p. 223 (1762). *M. aquatica minor* Sole Menth. Brit. 23, t. 10 (1798). *M. aquatica* L., var. *capitata* Briq. (1894). Stem erect, simple or branched, 6 in. to 3 ft. high, purple-red in exposure, green in shade, ± densely hairy or shaggy with white or grey, deflexed hairs; internodes 3-7.5 cm. long. Leaves short, broadly ovate, obtuse, subcordate or rounded at the base, broadest a little above the base, rather shallowly serrate, ± densely hairy on both faces, or subtomentose beneath, but less densely hairy in water and in bogs, petiolate; superficies 2.5-6 × 1.5-3.5 cm.; serratures directed forward, 0.25-2 mm. deep, mostly 1 mm. Inflorescence of 1-2 verticils, the lowest remote and often pedunculate; top verticil 2-2.3 cm. across. Lowest 1-2 pairs of bracts leafy, the rest lanceolate or setose, hirsute, with long, 2-6 jointed hairs. Pedicels hirsute, with long recurved white hairs. Calyx and its teeth hirsute with long white loosely ascending hairs. Corolla bright purple, with many white hairs without. Stamens exserted, anthers dark purple.

One of the two common forms of the species well represented in the Linnean herbarium. Easily recognised by its short, broad, subcordate leaves and very broad terminal head of flowers. Very hirsute in its best form, but varies greatly in degree of hairiness in bogs and in water. Basingstoke Canal, Woking, 1925, Thames Banks, Mortlake, 1921 (with scent of *M. citrata*), Wimbledon Common, 1925, Dunsfold Green, 1925, all in Surrey, *J. Fraser;* Snodland, Kent, 1919, *J. Fraser.*

Var. MAJOR Sole Menth. Brit., p. 25, t. 11 (1798). *M. aquatica* L., var. *acuta* H. Braun (1890). *M. aquatica* L., var. *acuta* Briq. (1894). Stem stout, erect, simple or freely branched, with short, ascending branches, usually shortly and thinly hairy, with reflexed hairs, green, 6 in. to 6 ft. high (the latter in hedges, &c.); internodes 3-9 cm. long. Leaves ovate, elliptic or oblong, more or less cuneate or attenuate at the base, or some of the uppermost rounded there, attenuated upwards, acute or subacute, serrate, very thinly hairy with very short hairs on both faces, and long, adpressed pile on the principal nerves beneath, but varying considerably in the degree of hairiness; superficies 3-7.5 × 2-3.7 cm.; serratures very numerous, mostly directed forwards, 0.25-2 mm. deep, but mostly shallow, except in shade. Inflorescence of one large head, 2-2.5 cm. across, and 1-3 others ± remote, one or two of the lowest verticils pedunculate. Two or three of the lowest bracts leafy, the rest setose, shortly hairy. Pedicels with short reflexing hairs. Calyx and teeth covered with ascending hairs, sometimes so short (1-2 joints) as to make them appear subglabrous. Corolla hairy without, pale to deep purple. Stamens exserted.

The most common variety of *M. aquatica* in Surrey, recognisable by its elongated leaves, ± cuneate at the base, and the subglabrous character of the whole herb as a rule. *M. aquatica* L., var. *subglabra* Baker could most often be picked out of this variety. The leaves are usually green, but sometimes deep bronzy-purple in dried up mud-pools. R. Ember, E. Molesey, 1925, Virginia Water, 1925, Chiddingfold and Newdigate, 1926, Holmwood Common and Ripley, 1926, &c., all in Surrey, *J. Fraser*; Marston, towards Water Eaton, Oxon, 1885, Wadbister, Zetland, 1924, *G. C. Bruce*; Cannock Chase, Stafford, 1923, *H. W. Daltry.*

Forma CANA Fraser, forma nov. Whole herb much more hairy than the type, the hairs being denser and very much longer, so that the plants look hoary or grey. Leaves densely hairy above, tomentose beneath, with long white adpressed hairs, forming a dense pile on the principal nerves. Pedicels and the whole calyx densely hirsute with white hairs. Fair Oak Lane, Chessington, and waysides north of Chiddingfold, Surrey, 1926, *J. Fraser.*

Var. DENTICULATA H. Braun Ueb. einig. Art. (1890). *M. denticulata* Strail Essai (1887). *M. aquatica* L., var. *lupulina* Briq. (1891). Stem erect, stout, simple or ± branched, with short branches, rather thinly hairy, with loosely recurving hairs, 1-2 ft. high; internodes 3-6 cm. long. Leaves broadly ovate, sub-cordate at the base, rather elongated at the point, lower ones obtuse or even rounded, all the rest acute, broadest near the base, green above, varying from thinly hairy on the lower ones to densely hairy on the upper ones, underface grey tomentose; superficies 2-4 × 1.5-4 cm.; starved specimens amongst sand dunes may have the leaves reduced to 1-1.5 × 0.7-1.2 cm.; serratures *very numerous*, directed forward, rather irregular in size by having small denticles between the larger, *triangular, acute*, 12-24 on each margin, 0.5-2 mm. deep. Inflorescence of 1-4 verticils, 1-2 of the lowest being pedunculate; apical head 2 cm. across or less.

Compared with *M. aquatica* (*M. hirsuta* Huds.) the most striking feature of the variety is the *very numerous, triangular serratures*, with intermediate denticles on thriving specimens, such as those from the Isle of Wight, and W. Kent, mentioned in *B.E.C. Rept.*, 616, 1924. The miniature specimens (3 in. high) from Braunton Burrows are simply shaggy with hairs, but the same number, spread over a normal leaf, would have a very different appearance.

Var. NICÆENSIS Briq. Stems ± branched, with short ascending branches, thinly hairy near the base, more densely upwards, with short, retrorse hairs, 2-3 ft. high; internodes 3-11 cm. long. Leaves short, broadly ovate, almost deltoid, very convex on the margin, very obtuse, or with a minute cusp to the broad apical tooth, rounded at the base, broadest a little above it, very shallowly crenate-serrate, thinly and shortly hairy on both faces; superficies 2-5 × 2-4 cm.; serratures 0.25-2 mm. deep, but most often under 1 mm., and lying close to the edge of the leaf. Inflorescence of 1-3 verticils, the lowest remote and pedunculate; terminal heads about 1.6 cm. across, but these small heads may be numerous on a branched plant.

A river-bank variety, recognisable by the short, obtuse leaves, subdeltoid and nearly as broad as long, by the long internodes and small heads.

Var. WEIHEANA H. Braun Ueb. einig. Art., p. 80 (1890). *M. Weiheana* Opiz. Stem stout, erect, simple or with numerous short branches, thinly and shortly hairy, reddish, 2-3 ft. high; internodes 4-9 cm. long. Leaves large, elongated, broadly ovate, or broadly oblong-ovate, obtuse, or several of the upper pairs acute, all very convex on the margin, rather finely crenate-serrate, rounded at the base, but mostly suddenly and very shortly cuneate, broadest a little above the base, usually pale red, thinly and shortly hairy on both faces, or the lower ones subglabrous; superficies 3-9 × 2-2.5 cm.; serratures acute, directed forward and most often lying close to the margin, often with a small denticle between the larger ones, 0.25-1.5 mm. deep. Inflorescence of one head and 1-2 verticils, one or both remote and pedunculate.

Apparently a river-bank Mint and in its more glabrous forms named *M. aquatica* L., var. *subglabra* Baker. A more hairy plant from Denbigh Hall, Bucks, *G. C. Druce*, was named by Briquet forma *villosa*.

Var. INCISO-SERRATA Briq. Les Labiées des Alpes Maritimes, Part I., p. 80 (1891). *M. inciso-serrata* Strail (1887). Stem stout, erect, branched, with short ascending branches, rather densely clothed with closely or loosely deflexed, white hairs, bearded at the nodes, 2-3 ft. high; internodes 3.5-6 cm. long. Leaves ovate to ovate-lanceolate, acute or subacuminate, with a long, terminal tooth, sharply incise-serrate, ± cuneate at the base, or the upper ones rounded, light green above and thinly to densely hairy, with long hairs, beneath densely hairy or subtomentose in exposure, but not in shade, feathered with long, adpressed pile on the principal nerves; superficies 3.5-6.5 × 2-3.5 cm.; serratures directed forward, but salient, with very frequently a small denticle between the larger ones, 0.25-2.5 mm. deep. Inflorescence of 1-6 verticils, 1-3 of which go to form the terminal head, the other 1-3 being remote and pedunculate.

The features of the variety are the ovate, elongate, acute leaves, shortly cuneate at the base, and the incised serraures. The length of the inflorescence is notable on strong plants. See *Rep. B.E.C.*, 614, 1924.

Var. OBSCURA Wimm. et Grab. Stem erect, stout, ± branched, thinly hairy throughout, with reflexed hairs, 2-3 ft. high; internodes 2-10 cm. long. Leaves ovate, obtuse, suddenly and shortly cuneate at the base, very shallowly serrate or crenate-serrate, very thinly and shortly hairy on both faces, or the lower ones subglabrous on the upper face, convex on the margin, and ciliate with short hairs; superficies 4-6 × 2-3.5 cm.; some of the uppermost leaves and very leafy bracts are very *broadly ovate, rounded at the base*, subacute, with a superficies of 3.5-5 × 1.5-3.5 cm.; serratures 3-6 on each margin, directed forward, mostly lying very close to the margin, and 0.25-1.5 mm. deep, most of them under 1 mm. Inflorescence of 1-3 verticils, the two lower remote and pedunculate.

A water form, characterised by the long internodes, subglabrous character, obtuse leaves and *very few shallow serratures.*

Var. LOBELIANA Beck. Fl. der Geg. um Frankf. a M. t. 1, p. 222 (1828). Stem erect, *slender* for the species, simple or ± branched, subglabrous below, but ± densely hairy near the apex with retrorse hairs. 1-2½ ft. high, pale red in exposure, green in shade; internodes 2-8 cm. long. Leaves small to medium, elliptic to ovate-elliptic, acute, or the lower ones obtuse, rounded or shortly cuneate at the base, normally green, but liable to acquire red, brown or violet colours in acid soils or muddy ditches, thinly and shortly hairy on both faces, finely and sharply serrate, with frequently a small denticle on the lower side of the larger ones; superficies 2-4 × 1.2-3 cm.; serratures 0.25-2 mm. deep. Inflorescence of 1-5 verticils, 1-2 of which form the terminal head, while the rest are more remote and 1-2 of them usually pedunculate. The calyx looks thinly hairy, but it means that the numerous hairs are very short.

The features of the variety are the slender stems, small, but elongated leaves, numerous small serratures, and usually small capitula, though the terminal one on some plants of a colony may measure 2 cm. across. Additional records to previous ones are Holmwood Common, and Basingstoke Canal, Woking, Surrey, 1926, *J. Fraser.*

Var. ORTMANNIANA H. Braun Ueb. einig. Arten, &c., p. 82 (1890). *M. Ortmanniana* Opiz Natural. xi., 437 (1826). *M. crenato-dentata* Strail. Stem *slender*, erect, flexuous, green, thinly hairy or subglabrous below, but more densely hairy above, with reflexing hairs; internodes 2-6.5 cm. long. Leaves very *small and short*, broadly ovate, the lower ones obtuse, the upper ones acute, very shallowly serrate, rounded at the base, the lower ones thinly and shortly hairy on both faces, the upper ones more decidedly hairy; superficies 2-3.3 × 1.5-2.5 cm.; serratures 0.25-1 mm. deep. Inflorescence of 2-4 verticils, two forming the terminal head, the other 1-2 remote and pedunculate. Whole calyx shortly hairy.

The slender stems, small leaves, with short petioles and very shallow serratures suggest × *M. verticillata*, whether seen growing or dried. A fresh record is Bolder Mere, Wiseley, Surrey, 1926, *J. Fraser.*

C. Inflorescence verticillate; pedicels and calyx hairy, leaves large.

×MENTHA VERTICILLATA L. Syst. Nat. x., p. 1099, Nr. 4 a (1759). (*M. aquatica* × *arvensis.*) Stem erect, simple or branched, green, moderately hairy below, densely hairy above, with short deflexed hairs, 2-3 ft. high; internodes 2-9 cm. long, mostly 2-3 cm. Leaves *short*, broadly ovate, sometimes almost deltoid, obtuse or the uppermost 1-2 pairs and the bracts acute, rounded, truncate or subcordate at the base, shortly petiolate, moderately to densely hairy on both faces, rarely subglabrous, serrate; superficies 2-4.5 × 1.5-3.3 cm.; serratures acute or subacute, very numerous, directed forward, 0.25-1.5 mm. deep. Inflorescence verticillate, verticils all separate, or the upper ones crowded and subspicate, or the uppermost three may be so crowded as to pass for *M.*

paludosa Sole (though the leaves of that are different in shape). Bracts ovate like the leaves, but gradually decreasing in size till scarcely longer than the flowers. Pedicels with long, recurving hairs, or short and more closely deflexed. Calyx with short or moderately long hairs. Corolla purple, hairy. Stamens included or occasionally exserted.

My specimens of the above represent the common form in Surrey, yet I had not seen anything from elsewhere to match them till I examined the herbarium of Linnaeus, whose specimen fits them. He wrote *verticillata* on the sheet, and afterwards scratched out the name, substituting *sativa*. He published the former name, however, in op. cit. Bolder Mere, Wisley, 1900, R. Wey below Godalming, 1904, Holmwood Common, 1916, Vents Pond, Holmwood Common, 1926, Basingstoke Canal, Woking, 1926, all in Surrey; Thames Banks, Laleham, Middlesex, 1885; by the Thames, Shiplake, Oxon, 1898 (likely to be named *M. paludosa* Sole); meadows, Hurley, Berks, 1888 (good enough to be named *M. sativa* L., var. *subglabra* Baker). With the exception of the last two, the rest are typical × *M. verticillata* L.

Var. RIVALIS Briq. (1894). (*M. aquatica* × *arvensis*.) Stem stout, erect, branched, thinly clothed with deflexed hairs, 1-3 ft. high; internodes 3-7 cm. long. Leaves elliptic, obtuse, narrowed to both ends, sometimes attenuate at the base, broadest about the middle, except one or two of the uppermost pairs, which are more rounded at the base and ovate, thinly and shortly hairy on both faces, or sometimes more obviously hairy, serrate, petiolate, with rather long petioles; superficies 3-7 × 2-4 cm.; serratures mostly directed forward, acute, 9-15 on each margin, and 0.25-1.5 mm. deep. Verticils mostly all remote when they reach the flowering stage. Bracts ovate to ovate-lanceolate, acute, gradually decreasing in size, but longer than the flowers. Pedicels, calyx and calyx teeth hairy as in the type. Corolla purple. Stamens included.

Additions to previous records are Basingstoke Canal, Woking, 1925, Virginia Water, Surrey, 1926, *J. Fraser;* Symond's Yat, W. Gloucester, 1925, *H. J. Riddelsdell*, and *M. L. Wedgwood*. Features of the variety are a strong growing plant, with long, elliptic leaves ± attenuate at the base, or some of the uppermost more rounded at the base and inclined to be ovate, as are the shortening bracts.

Var. OVALIFOLIA H. Braun in Zoolog.-botanisch. Gesellsch. in Wien (1890). Var. *ovalifolia* Briq. (1894). *M. ovalifolia* Opiz Natural., S. 70 (1824). (*M. aquatica* × *arvensis*.) Stem erect, except in water, simple or branched, with short ascending branches, very thinly hairy below, more densely hairy upwards, bearded at the nodes, 2 ft. high or more; internodes 3-8 cm. long, generally 4-6 cm. Leaves broadly oval, medium, large or very large, obtuse, rounded at the base but usually narrowed suddenly to a short wedge at the top of the petiole, acutely serrate, very shortly and thinly hairy or subglabrous on both faces, though the uppermost ones and the bracts may be more decidedly hairy in dry situations; superficies 2.5-5.5 × 1.8-4 cm.; petioles up to 2 cm. long on the lower part of the stem, gradually shorter upwards; serratures directed forward, and mostly near the edge of the leaf, except in water, 0.25-2 mm.

deep, and 5-10 on each margin. Bracts ovate, acute, gradually shorter. Verticils all separate, narrower than the bracts. Stamens included, seldom exserted.

A plant of river banks, ditches, bogs, wet meadows, and places where water has stagnated in winter. Very common and variable in appearance, chiefly in the size of the leaves. Occasionally *M. sativa* L., var. *subglabra* Baker, and *M. paludosa* Sole can be taken out of it by those who care to do so. Fresh records are the R. Mole, E. Molesey, Runnymead, and Dunsfold Green, 1925, Basingstoke Canal, Woking, R. Wey above Newark Mill, waysides south of Chiddingfold, 1926, all in Surrey, *J. Fraser;* banks of the Chew, Compton Dands, N. Somerset, 1925, *J. W. White.*

Var. CONGESTA Fraser, var. nov. × *M. verticillata* L., var. *ovalifolia* Briq., forma ad. var. *atrovirentem* vergens (J. Briquet, 1894). (*M. aquatica* × *arvensis.*) Stem erect, simple or profusely branched, with widely spreading and ascending branches, stout, shaggy with loosely reflexed, long, grey or white hairs, bearded at the nodes, 1-3 ft. high; internodes 3-9.5 cm. long, usually 3-5 cm. Leaves under dry conditions *lanceolate to ovate-lanceolate*, obtuse below, acute above, cuneate and sometimes attenuate at the base, sharply serrate, densely hairy above, more so beneath or tomentose, with very conspicuous, adpressed, feathery-looking white pile on the principal nerves; under favourable conditions with an adequate rainfall, the leaves are *twice as large*, *elliptic*, ± attenuate at both ends, and less hairy on both faces (this is the case in hedges and under cultivation); superficies 3.5-7.5×1.5-3.8 cm.; serratures 8-12 on each margin, mostly directed forward, but occasionally some of them are salient, and concave on the lower side, 0.25-2 mm. deep, mostly 1 mm. and conspicuous. Inflorescence congested, and under dry conditions only 1-2 verticils may be produced, but with adequate moisture there may be 7-10, of which 2-5 may be pedunculate, and the uppermost 3-6 crowded into a spike, hiding the bracts. Pedicels shaggy with 3-5 jointed, deflexed, white hairs; calyx similarly covered with ascending hairs. Corolla purple, very hairy without and in the throat within. Stamens included.

The affinity of this variety is with var. *ovalifolia*, but the leaves are much more attenuated at both ends, as are the bracts and the whole herb vastly more hairy. I fail to see any affinity with var. *atrovirens.* The specimens I have seen named by Briquet, and those in various herbaria are most often the starved type with a very short inflorescence. Localities are Stonebridge, Dorking, 1921, waysides north of Newdigate, 1926, waysides south of Chiddingfold, 1926, *J. Fraser;* near Newdigate, 1900, *C. E. Salmon*, all in Surrey on clay soil; Henfield, W. Sussex, 1911, *E. S. Todd;* Horton, Dorset, *E. S. Marshall;* Tweedside, Peebles, 1909, and Aldermaston, Berks, 1888, *G. C. Druce.*

Forma LITIGIOSA E. Malinvaud. Stems and leaves as in var. *congesta.* Malinvaud wrote on the label, "corolla intus villosa, e grege sativum, corolla intus glabra, forma litigiosa." On dissection I find that the throat of the corolla is not absolutely glabrous, though very nearly so, compared with that of var. *congesta*, which has very numerous hairs. Molton, South Devon, 1896, *G. C. Druce.*

Var. MOTOLENSIS (Opiz) in Lotos, iii., p. 208 (1853) Druce. (*M. aquatica*×*arvensis.*) Stem erect, branched, thinly strewed with short, deflexed hairs, often reddish at the base, or for the greater part of its length, 2-3 ft. high; internodes 2.5-13.5 cm. long. Leaves oval-elongated, petiolate, obtusely pointed or cuspidate, rounded at the base, ± decurrent on the petiole, irregularly serrate, thinly strewed with short hairs on both faces; superficies 5.5-6.5 × 3.2-4 cm.; serratures directed forward, acute, 0.25-1 mm. deep. Bracts like the leaves, rapidly decreasing in size, though always longer than the verticils, becoming ovate, acute and more hairy than the leaves. Many of the lower verticils are shortly pedunculate. Bracteoles lanceolate, hairy, ciliate, equalling or shorter than the corolla. Pedicels with rather short, reflexed hairs. Calyx with short, ascending hairs. Corolla hairy. Stamens included.

A tall growing variety of × *M. verticillata*, with very large and long oval leaves, sometimes quite red underneath, and apparently a water form. Wytham Meadows, Berks, 1900, *G. C. Druce.*

Var. HIRSUTA Koch. (*M. aquatica* × *arvensis.*) Stem erect, often flexuous, rather thinly hirsute below, very densely hirsute above, with long, loosely deflexed, white hairs, 2-2½ ft. high; internodes 3.5-6 cm. or more. Leaves very large for ×*M. verticillata*, broadly ovate, or a few of the lower ones broadly oval, obtuse, ± cuneate at the base, the uppermost pair less so, coarsely serrate, villous on both faces, with long hairs often 1 mm. long or more; superficies 4-6 × 3.5-5 cm.; serratures directed forward, triangular, acute, irregular, often having a small denticle on the lower side of large ones, 0.5-3 mm. deep. Bracts ovate, acute, like the leaves, but rapidly decreasing in size upwards, *very villous on both faces*, and appearing above the last whorl. Pedicels densely hirsute with reflexed white hairs. Calyx villous; teeth subulate, acuminate, long, ciliate with long white hairs. Corolla pale purple, very hairy. Stamens included.

For size of leaf this can be matched by some other forms of × *M. verticillata*, but not for size and depth of serratures. The villous character of the whole herb can be matched by the var. *congesta*, in dry seasons more especially, but the leaves of the latter are very different in shape. By Mynde Park Lake, Herefordshire, 1918, *E. Armitage*. This was labelled *M. sativa* L., var. *pilosa* Spr., but C. Sprengel, in the 2nd edition of *Flora Halensis* (1832) corrected this to *M. aquatica* L. (*M. hirsuta* Sm.).

* Pedicels and calyx hairy; leaves small.

Var. ADULTERINA Briq. (*M. aquatica* × *arvensis.*) Stem weakly amongst rank vegetation, stout in exposure, erect, much branched below the main inflorescence, thinly hairy below, densely so above, 12-18 in. high; internodes 2-7 cm. long. Leaves small to medium, elliptic, tapering to both ends, obtusely pointed, obtusely to acutely serrate, lower ones rather thinly hairy on both faces, upper ones more densely so; superficies 2.5-4.5 × 1-2.5 cm.; serratures rather fine, directed forward, regular 0.25-1 mm. deep. Inflorescence of 7-9 verticils, *very closely arranged* giving a subspicate appearance, generally surmounted by a few pairs of small leaves, but occasionally tipped by a verticil; verticils small, compact, rarely very shortly pedunculate. Bracts like the leaves but gradually shorter till the uppermost 1-2 pairs may be shorter than the corollas. Corolla purple, hairy. Stamens included, or occasionally exserted in dry seasons.

Seems to be confined to various parts of Holmwood Common, in Surrey, on a clay soil. Starved specimens 2-5 in. high have a congested inflorescence, resembling a leafy spike.

Var. **LINTONI** Briq., var. nov. (1894). (*M. aquatica* × *arvensis.*) Stem about 1 ft. high, apparently simple, subglabrous near the base, thinly and shortly hairy upwards; internodes 1.5-3 cm. long. Lower leaves narrowly ovate-lanceolate, obtuse to subacute, shallowly and acutely serrate, shortly cuneate at the base, thinly and very shortly hairy on both faces; superficies 3-3.5 × 1.5-2 cm.; serratures directed forward, 0.25-0.75 mm. deep. Bracts lanceolate, or subacuminate, more tapered to the base than the leaves, the uppermost scarcely shorter. Verticils all separate, and none amongst the upper leafy bracts. Calyx short, campanulate.

Originally passed through the B.E.C. in 1887, as *M. arvensis* × *sativa*, this variety bears considerable resemblance to a narrow-leaved form of *M. arvensis*, but the calyx teeth are too long for the latter.

Var. **TRICHODES** Briq. (1894). (*M. aquatica* × *arvensis.*) Stem ± branched, hairy, 1 ft. high or more; internodes 2-4 cm. long. Leaves of medium size, oblong, acute or cuspidate, ± hairy on both faces; superficies 2-3.5 × 1.3-1.5 cm.; serratures varying from triangular, to subulate, acuminate, 0.5-2.5 mm. deep, irregular and distant. Bracts lanceolate, acuminate, with 1-3 sharp or slender teeth on each margin. Verticils all separate.

The long, slender serratures are the feature of this variety. Hereford, *G. C. Druce.*

Var. **CRENATA** Briq. *M. crenata* Becker, Rchb. Fl. Germ. Excurs. (*M. aquatica* × *arvensis.*) Stem slender, erect, flexuous, simple, or sparingly branched when crowded, more freely branched, with flexuous, branches where space is adequate, ± covered with long and short, deflexed white hairs, 1½-2½ ft. high; internodes 3-8 cm. long. Leaves of small to medium size, ovate to oval, acute or wholly obtuse, rounded at the base and slightly decurrent on the petiole (including the bracts), convex on the margin, shallowly crenate to finely serrate, ± densely hairy on both faces, with long and short hairs; superficies 2.5-3.5 × 1.8-2.5 cm.; crenatures and serratures 0.25-0.75 mm. deep, directed forward and mostly lying very close to the margin. Verticils sessile, all separate or occasionally with the uppermost ones crowded and subspicate. Bracts becoming very short towards the apex of the stem. Corolla purple, hairy. Stamens included or a few exserted.

The slender, flexuous stems, and the small, crenate lower and shallowly serrate or serrate-crenate upper leaves are the features of the variety. Additional records are Walton-in-Gordano, N. Somerset, 1925, *J. W. White;* Wimbledon Common, Surrey, 1925, *J. Fraser.*

Var. CAERULEA Briq. (*M. aquatica* × *arvensis.*) Stems fairly stout, much branched, with ascending branches, thinly hairy below and only moderately hairy above, about 18 in. high; internodes 2-6 cm. long. Leaves small, ovate, shortly cuneate at the base, broadest a little above the base, convex on the margin, subglabrous on the lower part of the plant, thinly hairy on both faces towards the top of it, *glaucous beneath*, finely serrate, or many of the smaller leaves shallowly crenate; superficies 2.5-4 × 1.5-2.7 cm.; serratures acute or subacute, directed forward, 0.25-0.75 mm. deep. Bracts gradually smaller upwards. Verticils all separate.

The features of the variety are the much branched stem, the glaucous undersurface of the leaves, and the shallow serratures.

Var. RUBRO-HIRTA Briq. *M. rubro-hirta* Lej. et Court. (*M. aquatica* × *arvensis.*) Stem erect, straight, simple or branched, with rather long straight branches, covered with long, reflexed hairs above the middle, but thinly hairy below, 16-20 in. high; internodes 3-5 cm. long. Leaves *small, ovate, acute, subcordate* at the base, or slightly decurrent on the petiole, sharply serrate, densely covered with long hairs on both faces; superficies 3-4 × 2-3.5 cm.; serratures directed forward, the lower ones rather obtuse, those on the upper leaves acute, 0.25-1 mm. deep. Lower bracts like the leaves, but soon giving place to very small, triangular, cuspidate ones, and the uppermost ones completely hidden by the flowers. Verticils sessile, the lower remote, the uppermost crowded and subspicate. Pedicels and calyx covered with long, spreading hairs, the base of the calyx very hairy. Corolla purple, hairy. Stamens included.

Hairy stems, small ovate or subdeltoid, sharply serrate, very hairy leaves, the upper verticils crowded into a spike, and the very small bracts are the features of the variety.

Var. BENESCHIANA (Opiz). *M. Beneschiana* Opiz, ex Déségl. in Bull. Soc. Sc. Angers 206 (1882). (*M. aquatica*×*arvensis.*) Stem erect, flexuous, simple or slightly branched, reddish below, brown above, and thinly strewed with hairs; 16-20 in. high; internodes 2-4.5 cm. long. Leaves small to medium in size, oval, acute, thinly strewed with short and long hairs on both faces, ± decurrent on the short petiole, serrate; superficies 3.5-4 × 2-2.5 cm.; serratures equal, directed forward, acute, 0.25-0.75 mm. deep. Verticils all or mostly all shortly pedunculate to the apex of the stem, all separate. Bracts like the leaves but gradually shortening to the top of the axis. Bracteoles lanceolate, about as long as the calyx. Pedicels purple and covered with reflexed hairs of short or medium length. Calyx thinly covered with short, ascending hairs, teeth brown. Corolla pale purple, hairy. Stamens included.

The small, oval, acute leaves, decurrent on the petiole, the pedunculate verticils, and the short hairs on the calyx are the main features of the variety. Port Meadow, Oxford, 1886, *G. C. Druce.*

** Pedicels and calyx hairy; leaves twice as long as broad.

Var. ACUTIFOLIA (Sm.) Fraser. *M. acutifolia* Sm. in Trans. Linn. Soc. Vol. v., 203 (1800). (*M. aquatica* × *arvensis.*) Stem erect, simple, or ± freely branched according to circumstances or environment, very thinly and shortly hairy below or subglabrous, more densely hairy on the axis of the inflorescence, with short, closely deflexed hairs, 2 ft. high; internodes 2-5 cm. long. Leaves lanceolate, or ovate-lanceolate, acute at both ends, shortly petiolate, unequally serrate, but entire at both ends. Verticils numerous, sessile, equalling or almost equalling the petioles, many flowered. Bracts like the leaves but gradually shortening upwards. Bracteoles linear-lanceolate or subulate. Pedicels hispid with horizontally patent hairs, variable in length, often recurved. Calyx tubular, thinly and shortly hairy on all sides, especially at the base, with ascending hairs. Corolla purple, thinly hairy without and in the throat. Stamens included.

The above is very nearly Smith's original description, loc. cit., but while keeping close to it I doubt if the verticils are always sessile even in wild specimens. He laid most stress on the horizontally spreading hairs on the pedicels for his species, but that and almost every other character are controverted by one or other colony on the Medway. He quotes Isaac Rand (Chelsea Physic Garden), as having observed it on the side of the River Medway, Kent, but I have a specimen collected by Rand and Buddle on the Medway that has its pedicels densely hirsute with long white hairs pointing in a variety of ways. Of course, Smith had only seen two specimens, from which he drew up his description, and was somewhat doubtful as to its being a distinct species. Specimens very close to Smith's type were gathered by the R. Medway, Nettlestead, and below Yalding, W. Kent, 1919, *J. Fraser.* At the last named place the main axis sometimes ends in 1-2 verticils forming a capitulum but this does not controvert Smith's plate in Eng. Bot. ed. 2, t. 809, except that the capitulum in the plate is subtended by long bracts, which in my specimen are lanceolate and shorter than the flowers. The capitulum is only occasional on wild or cultivated plants.

Forma HIRSUTIPES Fraser. Leaves lanceolate, obtusely pointed, 5-5.5 × 1.7-2.2 cm. Pedicels hirsute with long white hairs of 3-4 joints, most of them recurved from the middle or below it, some ascending and only a few spreading horizontally. Base of calyx similarly hirsute. Collected by the R. Medway by Isaac Rand and Buddle, between 1724 and 1743.

Forma ALBIFLORA Fraser. Stems erect, branched, very profusely in cultivation. Leaves lanceolate or ovate-lanceolate, broadest in cultivation, the lower obtuse, the upper and the bracts acute, subglabrous; superficies 4-8 × 2-3.5 cm.; serratures rather fine, not altered by cultivation. Verticils all separate, ten out of twelve shortly pedunculate. Pedicels purple, covered with very short 1-2 rarely 3 jointed hairs. Calyx with very short ascending hairs, conspicuously glandular. Flowers white. R. Medway, East Barming and Wateringbury, W. Kent, 1919, *J. Fraser* at three stations. This comes very close to Smith's type, except in the colour of the flowers.

Forma PLICATA Fraser. Leaves ovate-lanceolate, the lower obtuse, the upper acute, dark green, strongly *ridged and furrowed or plicate* along the main lateral veins, rather more hairy than usual. Bracts lanceolate or ovate, gradually shortening. Verticils all separate, most of them shortly pedunculate, or in some seasons the axis is terminated by a capitulum of 1-2 verticils. Pedicels with rather long, widely recurving hairs, and base of calyx more hirsute than usual. R. Medway, Nettlestead, W. Kent, 1919, *J. Fraser*.

Forma DEFLEXA Fraser. Leaves ovate-lanceolate, acute or acuminate, rather more coarsely serrate than usual, though not more deeply than 1 mm., with rather longer pilose hairs than usual on the principal nerves beneath. Verticils all separate, often shortly pedunculate. Pedicels covered with short, 1-2 jointed, *closely deflexed or retrorse hairs*. Base of calyx hirsute with similar spreading and deflexed hairs. Bank of R. Medway, Yalding, W. Kent, 1919, *J. Fraser*.

Var. DUBIA Fraser. (*M. aquatica* × *arvensis*.) Stem erect, simple or slightly branched in the wild state, when crowded, but branched from the base upwards in cultivation, the primary and secondary branches flowering, thinly and shortly hairy below, densely so above, with loosely arching hairs, more closely reflexed towards the apex, 1-2 ft. high; internodes 2-9 cm. long. Leaves ovate-elliptic obtuse, tapering much to the apex, cuneate at the base, sharply serrate, thinly and shortly hairy on both faces, very convex a little below the middle; superficies 3-6.5 × 1.5-3.5 cm.; serratures 4-8 rarely 9 on each margin, directed forward, 0.25-1 mm. deep. Bracts similar to the leaves, gradually shorter, subacute to acute, the lower ones with long petioles (up to 1.5 cm.). Bracteoles lanceolate, about equalling the corolla. Inflorescence of 8-12 verticils, the lower shortly pedunculate, and not equalling the petioles, the upper sessile and wider than the petioles. Pedicels with few, many or no hairs, which are short, declining, or longer and arching widely. Calyx with short ascending hairs; teeth triangular, with rather long cilia. Corolla pale purple, hairy. Stamens partly exserted early in the season, but included later in the season.

This variety is closely related to *M. rhomboidea* Strail (1887), but the upper bracts (leaves of Strail) are not lanceolate-rhomboid, being shorter and more nearly ovate. Strail's plant also has more hairy stems, leaves and pedicels and deeply toothed leaves. It is also allied to *M. acutifolia* Sm., but the leaves are not twice as long as broad.

*** Pedicels and calyx-tube glabrous.

× MENTHA RUBRA Sm. Trans. Linn. Soc. v., p. 205 (1800). *M. rubra* Huds., var. *laevifolia* Briq. (1894). (*M. verticillata* × *spicata*.) Stem stout, erect, flexuous, purple, simple or branched below the inflorescence, glabrous or occasionally with a few hairs under the nodes, 2-5 ft. high; internodes 2-6 cm. long. Leaves broadly to narrowly ovate, obtuse or occasionally acute, rounded at the base or occasionally shortly cuneate, shortly petiolate, glabrous or having a few very short inconspicuous hairs on both faces, especially when young and only partly developed, rather coarsely serrate; superficies 3-6 × 2-3.5 cm.; serratures triangular, directed forward, acute, 0.5-3 mm. deep, with an occasional denticle on the lower side. Bracts as large as the leaves when growing in water, those on drier ground *subrotund*, *cuspidate*, or 1-2 lowest pairs ovate; superficies 1-4 × 1-3.5 cm. on firm ground; in water 6 × 3-4 cm. Some of the lower verticils are shortly pedunculate. Calyx long, tubular, glandular, glabrous; teeth thinly ciliate with 1-3 jointed hairs. Pedicels glabrous. Bracteoles linear to setaceous, tips thinly ciliate with 1-3 jointed hairs. Corolla purple, large, glandular, glabrous. Stamens ± exserted.

Localities given in *Rep. B.E.C.* 1924, p. 623.

Var. RARIPILA Briq. (1894). (*M. verticillata* × *spicata*.) Stem erect, flexuous, stout, simple or branched under the inflorescence, ± hairy, with short hairs, more numerous at the nodes, 1-5 ft. high, purple; internodes 2-6 cm. long. Leaves ovate, obtuse, seldom subacute, shortly petiolate, rounded at the base, occasionally shortly cuneate, ± *pilose on both faces*; superficies 3-6 × 1.5-3.5 cm.; serratures as in the type. Bracts small, *ovate*, *acute*, finely serrate, gradually shortening till the uppermost are shorter than the flowers, giving the inflorescence a subspicate appearance. Calyx-teeth rather more conspicuously ciliate than in the type, with 1-3 jointed hairs. Stamens frequently perfect and exserted.

Additional record to the *Report* is stream near Colbourne Station, Isle of Wight, 1894, *J. H. A. Steuart.*

Var. DRUCEI Briq. (1894). (*M. verticillata* × *spicata*.) Stem erect, flexuous, very thinly hairy below, more obviously hairy above, with short hairs, 2-3 ft. high, with a few branches above; internodes 2.5-7 cm. long. Leaves oval, acute, ± cuneate at the base, minutely hairy on the midrib above, thinly pilose on the nerves beneath; serratures 3-12 on each margin, acute, 0.75-1 mm. deep; petioles 7-13 mm. long. Bracts ovate, acute or acuminate, 8-16 mm. long. Calyx short, broad, campanulate, glabrous, conspicuously lined with glands between the ribs; teeth ciliate.

The features of the variety are the *oval, acute, finely serrate leaves, long petioles, small, ovate bracts and short, campanulate calyx.*

Var. CALLIMORPHA Briq. (1894). (*M. verticillata* × *spicata*.) Stem erect, simple or branched under the inflorescence, red, very shortly and thinly hairy, 2-4 ft. high. Leaves oblong to oval, shortly petiolate, suddenly pointed, obtuse or acute, dark green above, paler beneath, thinly hairy on both faces; superficies 2-6 × 1.5-3 cm.; serratures directed forward, acute or subacute, numerous, regular, 0.25-2 mm. deep. Bracts *large*, *ovate*, decreasing very gradually from 3.5-1.8 cm. in length at the eighth verticil, with full sized serratures. Calyx *short*, *campanulate*, glabrous; teeth ciliate. Pedicels glabrous.

The *large*, ovate bracts and the *short*, *campanulate calyx* are the features of the variety, which verges towards the sub-species *Wirtgeniana* F. Schultz.

MENTHA GENTILIS L. (*M. arvensis*×*spicata.*) Stem erect, thinly hairy below, more densely so above, reddish-purple, 12-18 in. high, simple or more often profusely branched from near the base to the inflorescence; internodes 2-5 cm. long. Leaves narrowly ovate to ovate-lanceolate, acute or ± attenuate at the apex, and at the base, or the uppermost true leaves rounded at the base, sharply serrate, thinly and shortly hairy on both faces, but variable and sometimes showing longer pile on the principal nerves beneath; superficies 3.5-6 × 1.5-2.3 cm.; serratures directed forward, 0.25-0.75 mm. deep. Primordial leaves larger, oval or oblong oval, obtuse and very shallowly serrate. Leafy bracts ovate, more rounded at the base than the leaves, with a long, entire point, gradually shortening upwards, and always exceeding the verticils. Several of the lower verticils are pedunculate. Pedicels and base of the campanulate calyx glabrous, or on some plants, a few hairs may run down to the middle of the tube. Calyx teeth ciliate with long white hairs of 3-6 joints. Corolla pale purple. Stamens included.

Waste ground, Swanage, Dorset, 1915, *C. B. Green*.

Var. VARIEGATA Sm. Trans. Linn. Soc. Vol. v., p. 208 (1800). Sole Menth. Brit. 43, t. 19. (*M. arvensis* × *spicata.*) Leaves similar to the type, but sometimes smaller, irregularly striped and splashed with yellow along the principal nerves.

Barnes Common, Surrey, 1912, *J. Fraser*.

Var. WIRTGENIANA (F. Schultz). (*M. arvensis* × *spicata.*) Stem erect, 1½-2 ft. high, red, ± branched from the middle to the inflorescence, sometimes *glabrous*, except just under the nodes, in other plants thinly and shortly hairy with closely deflexed hairs from the middle upwards; internodes 2-6 cm. long. Leaves ovate-lanceolate, obtuse to acute, mostly shortly decurrent on the short petioles, thinly and very shortly hairy on both faces; superficies 3-4.5 × 1.5-2.5 cm.; serratures directed forward, ± triangular, acute, irregular, 0.25-1.25 mm. deep. Leafy bracts very much smaller than in the type, ovate-lanceolate, gradually becoming shorter, but always exceeding the verticils. All the verticils are very small, and one or two of the lowest may be pedunculate, whether wild or cultivated. Pedicels glabrous. Base of the campanulate calyx glabrous strewed with large glands; calyx-teeth very *shortly ciliate with 1-3 jointed hairs*. Corolla small, pale to bright purple. Stamens included.

Symond's Yat, 1925, *H. J. Riddelsdell* and *M. L. Wedgwood*.

Var. RESINOSA Briq. (1894). *M. resinosa* Opiz. (*M. arvensis* × *spicata.*) Stem erect 1½-2 ft. high, ± branched, subglabrous below, thinly hairy upwards, internodes 2.5-5 cm. long. Leaves elliptic, acute or shortly acuminate, narrowed at both ends, thinly hairy on both faces, *incise-serrate*, shortly petiolate; superficies 3-5 × 1.5-2.5 cm.; serratures *triangular-subulate*, acute, directed forward, 1-3 mm. deep. Bracts similar in size and in serratures to those of the leaves and only a little smaller at the apex of the inflorescence.

The *incise-serrate leaves and bracts* are the features of the variety.

Var. Pauliana (F. Schultz) in Jahresber. d. Pollichia, 12, 1854, p. 31, 40 and 41. (*M. arvensis* × *spicata.*) Stem 1½-2 ft. high, *glabrous or subglabrous*, often red, branched about the middle, with ascending branches 10-15 cm. long; internodes moderate. Leaves elliptic to oval, more tapered to the base than the apex, serrate, with a large, entire apical tooth, glabrous above or with a few short scattered hairs, pilose on the principal nerves beneath, or occasionally with a few hairs all over; superficies 2.5-5 × 1-2.5 cm.; serratures 5-7 on each margin, directed forward, and acute to subacute. Bracts elliptic, similar to the leaves but *gradually smaller*, a little more hairy, and the serratures more acute. Pedicels and base of the calyx glabrous; calyx teeth ciliate with *numerous long, grey hairs.* Very often many of the lower verticils are pedunculate.

No British specimens seen. The description is drawn up from two sheets, with four specimens, in the Kew Herbarium. The variety differs from the type by the *glabrous or subglabrous stems*, and from the var. *Wirtgeniana* by the *long hairs on the calyx-teeth.*

Var. grata Briq. (1894). *M. grata* Host. (*M. arvensis* × *spicata.*) Stem erect, simple or slightly branched, thinly hairy with short hairs, red, slender, 12-15 in. high; internodes 2-3 cm. long. Leaves small, lanceolate, to ovate or elliptic, thinly hairy on both faces, with short, adpressed hairs, finely and closely serrate; superficies 2-3 × 1-1.9 cm.; serratures acute, directed forward, 0.25-1 mm. deep. Bracts similar to the leaves, gradually decreasing in size, but always longer than the corolla, and a few of the uppermost pairs have no flowers in their axils. Pedicels and base of the calyx glabrous; calyx-teeth moderately hairy, and ciliate with 1.3 rarely 4-jointed hairs. Corolla pale to bright rose-purple. Stamens included. Some of the lower verticils are shortly pedunculate.

The *short, slender stems, small leaves and bracts and fine serratures* are features of the variety. See *Rep. B.E.C.* 1924, p. 624 for localities.

Var. pratensis (Sole) Menth. Brit., p. 39, t. 17. (*M. arvensis* × *spicata.*) Stem erect, simple or branched under the inflorescence, with short ascending flowering branches, hirsute, pale green, becoming brown, 2-3 ft. high. Leaves narrowly oval or elliptic, obtuse, narrowed to both ends, cuneate at the base, sharply serrate, shortly petiolate, rugose, leathery, hirsute, sharply deflexed on the main axis; superficies 4.5-5 × 1.5-2 cm.; serratures directed forward, 0.5-1 mm. deep. Bracts short gradually shortening upwards, but always slightly exceeding the flowers, and apparently shorter than those of *M. cardiaca*, ovate-lanceolate, acute. Verticils all separate, larger or smaller. Pedicels and base of the calyx glabrous; calyx-teeth ciliate. Corolla purple-blue. Stamens included.

No recent specimens seen. Sole says this plant has the smell of Peppermint. The inflorescence recalls that of *M. cardiaca* Baker. Alderbury Common, New Forest, Wilts, 1789, *Sole.*

Var. GRACILIS (Sm.) Fraser. *M. gracilis* Sm. Trans. Linn. Soc. v., p. 210 (1800). *M. gracilis* Sole Menth. Brit., p. 37, t. 16 (1798). (*M. arvensis* × *gentilis.*) Stem erect, with ± numerous, short, ascending branches about the middle parts, thinly hairy, with short, closely deflexed hairs (Smith says scabrous, but that must be where most of the hairs fall off), reddish in exposure, green where shaded, 12-18 in. high or more; internodes 3.5-7.5 cm. long. Leaves lanceolate, occasionally ovate-lanceolate on the same stem, acute or shortly acuminate, with a long entire point, distinctly cuneate at the base, acutely serrate, very shortly petiolate, very thinly sprinkled with short adpressed hairs above, more hairy beneath, especially on the principal nerves, which are adpressed pilose, bright green; superficies 4.5-5.5 × 1.2-2.2 cm.; serratures directed forward, 1-2 mm. deep. Bracts similar to the leaves, gradually shorter, but always exceeding the flowers, and more hairy. One or two of the lower verticils are shortly pedunculate, the rest sessile. Bracteoles lanceolate to linear, shorter than the flowers, hirsute and ciliate. Pedicels and base of campanulate calyx glabrous; calyx-teeth ciliate with white hairs of 5-6 joints. Corolla pale purple. Stamens included.

Occasionally there are a few hairs near the base of the calyx, with some pin-headed glands on the pedicels; but I have failed to find that the apex of the corolla is bearded, as Smith says. Banks of R. Wye. Great Doward, Herefordshire, 1906, *Augustin Ley*, ex herb. *A. B. Jackson*; Haseley Common, Warwickshire, 1906, *H. S. Bickham.*

Var. CARDIACA (Baker) Briq. (1894). *M. gracilis* Sm., var. *cardiaca* (Baker). *M. cardiaca* Ger. em. 680, ex icone. (*M. arvensis* × *gentilis.*) Stem erect, stout or slender, usually very much branched from a little above the base, with short or long, ascending, floriferous branches, glabrous or with a few hairs at some of the nodes, and occasionally near the top, reddish in exposure; internodes 3-6 cm. long. Leaves varying from oblong to ovate-lanceolate and lanceolate, the lower obtuse, the upper acute, with an entire point, sharply serrate, rounded at the base or ± cuneate, subglabrous above, with a scattered few, very short adpressed hairs, rather more numerous beneath, but altogether subglabrous; superficies 3-6 × 1-2 cm.; serratures directed forward, 0.5-2 mm. deep (mostly 1 mm.). Primordial leaves shorter, broader, more obtuse or even rounded at the ends, sub-glabrous, very shallowly serrate. Bracts lanceolate or ovate-lanceolate, much shorter than the leaves but variable, and not always conforming closely to Gerard's figure, especially under cultivation. Some of the lower verticils are shortly pedunculate, whether wild or cultivated, all shortly separated. Pedicels glabrous. Calyx glabrous, but very glandular at the base, campanulate; teeth ciliate with very numerous, 3-6 jointed hairs. Corolla purple. Stamens included.

The leaves and bracts vary considerably in different seasons in the same locality according to the rainfall. Seven Stars Inn, Ripley, 1901, Fair Oak Lane, Oxshot, 1925, Woking, 1925, all in Surrey, *J. Fraser.*

A form occurred in Fair Oak Lane, with much more hairy stems, unusually narrow, deeply serrate, hairy, lanceolate leaves, more hairy bracts and calyx teeth, with shorter hairs right to the base of the calyx. No more of it appeared the following year, and the question arises whether or not these hairy forms are partial reversions to the *M. arvensis* parent.

**** Calyx teeth short, *M. arvensis*, type.

MENTHA ARVENSIS L. Sp. Pl. 806 (1753). Stem erect or diffuse, according to environment, simple or more often branched from the base upwards, with short or long, ascending branches, ± densely hairy, or thinly so in shade, with loosely or closely deflexed hairs, 3 in. to 1 ft. high; internodes 1-4.5 cm. long. Leaves elliptic, narrowed to both ends, cuneate at the base, often ovate in clay soils and rounded at the base (primordial ones often suborbicular and rounded at both ends), ± densely hairy on both faces, or thinly hairy in water and in shade, obtuse or the uppermost obtusely pointed to acute, obtusely serrate to crenate, always entire at the base; superficies 2.5-4 × 1-2.7 cm.; serratures directed forward, sometimes prominent but never incised, 0.25-1 mm. deep. Verticils always separate, mostly sessile, but occasionally a few of the lower ones may be shortly pedunculate. Bracts like the leaves, but gradually shorter, more acute and a few pairs terminate the stem. Bracteoles lanceolate, hairy like the leaves. Pedicels glabrous or occasionally with a few hairs, often purple. Calyx campanulate, short, purple in exposure, covered with patent hairs on all sides, but the hairs may vary in number and length like the rest of the plant. Calyx teeth subulate or triangular acuminate, ciliate with 2-5 joined hairs. Corolla purple ± hairy without. Stamens mostly exserted, though they may be ± included late in the season.

The above description is largely derived from the specimen (a good one) in the herbarium of Linnaeus with the Linnean Society, and must therefore stand as the type. The triangular acute or acuminate calyx-teeth places the type amongst the long-toothed forms of the species. Virginia Water, 1883, Ashtead Common, 1919, Dunsfold Green, 1925, Barwell Court, Chessington, 1926, Richmond Park, 1926, Cooper's Hill, Runnymead, 1926, Holmwood Common, 1926, all in Surrey, *J. Fraser*; Bledington, Oxon, 1926, *M. L. Wedgwood*.

Forma **ALBIFLORA** Fraser. Calyx green. Corolla white. Walton Bridge, Surrey, 1917, *J. Fraser*.

Forma **HIRTIPES** Fraser. Pedicels ± *densely hairy*, with long, deflexed or recurved white hairs. The calyx and corolla are usually very hairy also in conformity with the rest of the plant. Cooper's Hill, Runnymead, 1926, Fair Oak Lane, 1926, Surrey, *J. Fraser*; Beaconsfield, Bucks, 1926, *M. L. Wedgwood*.

Forma **ANGUSTIFOLIA** Fraser. *M. arvensis* L., var. *austriaca* Briq. Forma ad var. *cuneifoliam vergens* (Briquet, 1894). Stem erect, simple or profusely branched according to environment. Leaves lanceolate to elliptic and oblong-elliptic, according to soil, moisture and vigour, much more attenuate at both ends than in the type, with long, entire base and apex, hairy on both faces, more thinly so in cultivation; superficies 3-6.5 × 1-2.5 cm. Bracts similar to the leaves, gradually shorter and always acute.

Thames banks opposite Kingston, Middlesex, 1904, Barrowgreen Woods, Oxted, Surrey, 1916, Thames banks, Old Windsor, Berks, 1917, Holmwood Common and waysides south of Chiddingfold, Surrey, 1926, *J. Fraser*. The specimens from Old Windsor had uncommonly narrow leaves, but in the fifth year of cultivation they came more in line with the others for width, while retaining their attenuation.

Var. BREVIDENS Fraser, var. nov. Stem erect, simple or ± profusely branched, hirsute with rather loosely deflexed hairs, 6-15 in. high; internodes 2-4 cm. long. Leaves elliptic, obtuse, cuneate and entire at the base, sometimes attenuate on the same stems, serrate, shortly petiolate, moderately to densely hairy on both faces, according to surroundings; superficies 2.5-5.5 × 1.3-2.3 cm.; serratures directed forward, obtuse to subacute, often very shallow and lying close to the margin, 0.25-1.25 mm. deep. Bracts similar to the leaves, but sometimes larger, and very gradually decreasing in size, obtuse. Verticils small, globular, compact, especially after the corollas have dropped, apparently all sessile. Pedicels hairy with deflexed hairs. Calyx very hairy; teeth *triangular, obtuse, short,* ciliate with 2-5 jointed hairs.

The above is rather a strong-growing plant, and the leaves sometimes resemble those of *M. arvensis* f. *angustifolia*, but the short, blunt calyx-teeth are an important distinction. Barwell Court, Chessington, 1916, Cooper's Hill, Runnymead, Surrey, 1926, *J. Fraser*.

Var. AGRESTIS (Sole) Menth. Brit., p. 33, t. 14 (1798). *M. Scribae* F. Schultz in Flora Regensburg, Jan., 1873. *M. arvensis* L., var. *Scribae* Briq. (1894). Stem erect, simple or freely branched from the base, hirsute with deflexed hairs; internodes 2-6 cm. long. Leaves large, dark green, *roundly ovate to suborbicular*, rounded at the end, crenate to obtusely dentate, broadly rounded at the base or occasionally slightly decurrent on the *short* petiole, *strongly ribbed, rugose* (when fresh), hairy on both faces; superficies 2-4.5 × 2-3.2 cm.; crenatures or teeth 0.25-1.5 mm. deep. Bracts similar to the leaves, sometimes larger, decreasing in size till they get very small at the apex of the stem, where they are *sessile or subsessile*. Verticils apparently always sessile. Pedicels hairy, with spreading, recurving or deflexed hairs. Calyx shaggy with white hairs; teeth subulate, acuminate, long for the species, ciliate with 3-6 jointed hairs. Corolla purple, very hairy. Stamens exserted.

Holmwood Common, 1917, and woods near Newdigate, Surrey, 1926, *J. Fraser*. A very striking variety, readily recognised by its broad, *suborbicular, rugose* leaves.

Var. DENSIFOLIATA Briq. (1894). Stem erect, simple or profusely branched from the base, diffuse in watery ditches, with spreading and ascending branches ± densely hairy; internodes 1.5-5 cm. long, usually about 3 cm. Leaves broadly ovate, obtuse, *broadest and rounded at the base*, ± densely hairy on both faces, or much less hairy in water, sometimes slightly decurrent on the petiole, crenate to obtusely serrate, occasionally acutely serrate, making a dense leafy plant; superficies 2-4 × 1.5-2.5 cm.; crenatures and serratures 7-11 on each margin, directed forward, lying close to the margin, 0.25-0.75 mm. deep. Bracts similar to the leaves, and sometimes larger, very gradually smaller, as a rule, and the uppermost 2-5 pairs without flowers. Pedicels hirsute with 2-5 jointed hairs; teeth triangular, acuminate, and ciliate with 2-5 jointed hairs. Corolla purple, very hairy. Stamens usually exserted.

The broadly ovate leaves, broadest and rounded at the base, and the densely leafy plant are the features of the variety. Additional record to *Rep. B.E.C.* 1924, p. 626, Richmond Park, Surrey, 1926. *J. Fraser.*

Var. NUMMULARIA (Schreb.). Stem diffuse, *slender, flexuous*, ascending or erect in the upper part, with short, closely deflexed hairs, reddish or green, according to environment, 3-12 in. long; internodes 1.5-5 cm. long. Leaves elliptic to ovate, oval and suborbicular, obtuse or rounded at the apex, to subacute in the case of the longer uppermost ones, very *shallowly crenate to serrate*, attenuate at the base or only slightly decurrent on the petioles, very thinly and shortly hairy on both faces, that is subglabrous; superficies 1.3-4 × 1-2.3 cm.; crenatures and serratures 4-7 on each margin, directed forward, lying close to the margin, 0.25-0.5 mm. deep. Verticils mostly sessile, but 1-3 may be shortly pedunculate. Bracts like the leaves, gradually smaller upwards, with no flowers amongst the uppermost 2-4 pairs. Pedicels glabrous. Calyx short, campanulate, covered with short ascending hairs; teeth triangular, acute, or acuminate, ciliate with 1-3 rarely 4-5 jointed hairs in the more hairy plants of dry situations. Corolla bright rose-purple, hairy without. Seeds abundantly produced. Stamens exserted.

The small, shallowly crenate or serrate leaves, feeble and flexuous stems and bright flowers are marks of this variety. Banks of Thames opposite Surbiton, Middlesex side, 1914, opposite Kingston, Middlesex side, 1917; Richmond Park, Surrey, 1926, *J. Fraser.*

Var. OBTUSIFOLIA Briq. (1894). Stem erect, or diffuse when growing strongly, and flexuous as are the long branches, thinly hairy or subglabrous below, more hairy upwards, with short closely deflexed hairs, 6-20 in. long; internodes 1.5-6 cm. long. Leaves *broadly oval, obtuse*, suddenly narrowed to a large triangular obtuse tooth, *very convex* on the margin, thinly and shortly hairy to sub-glabrous on both faces, the younger undeveloped ones more obviously hairy, ± decurrent on the petiole; superficies 2-6 × 1.2-3 cm., the larger sizes in cultivation; serratures directed forward, rather acute, 4-7 on each margin, 0.25-1 mm. deep; petioles 1-1.5 cm. long. Bracts as large as the leaves, decreasing very little in size; bracteoles lanceolate, the lower ones deflexed and longer than the flowers. Verticils sessile or 1-2 very shortly pedunculate. Pedicels usually glabrous, but sometimes thinly hairy. Calyx thinly or densely covered with short, ascending hairs; teeth triangular acute, but shorter than in *arvensis*, ciliate with 1-3 rarely 4-jointed hairs. Corolla pale purple. Stamens exserted.

The broadly oval, obtuse leaves, with very convex margin and the thin scattering of short hairs are the features of the variety. The affinity is with the var. *Allionii*, but the leaves are much broader and less tapered to either end whether in the wild or cultivated state. An additional record is River Ericht, Blairgowrie, Perthshire, 1925, *E. S. Todd.*

Var. ALLIONII Briq. (1894). *M. Allionii* Boreau. Stem 6 in. high and erect, or 12-18 in. long and ascending or diffuse, with long ± flexuous branches, thinly hairy below or subglabrous, more hairy upwards; internodes 1.5-7 cm. long. Leaves elliptic obtuse to subacute, broadest about the middle, *equally tapered to both ends*, with a long, entire base, very thinly and *shortly hairy* or subglabrous on both faces, finely crenate to crenate-serrate; superficies 3-4 × 1.5-3 cm.; crenatures and serratures directed forward, the latter subacute, 0.25-1 mm. deep, 8-14 on each margin. Bracts similar to the leaves, as large, and but little smaller at the top. Verticils 8-15, mostly sessile. Pedicels glabrous. Calyx campanulate, thinly covered with short, ascending, 1-3 jointed hairs; teeth *short, triangular, acute*, thinly ciliate with 1-3 jointed hairs. Corolla pale purple, hairy. Stamens included.

Elliptic, subglabrous leaves, and short calyx-teeth are characteristic of the variety. Briquet admits as forms plants with a more hairy calyx and ± hairy pedicels. In such cases the pedicels have deflexed hairs of 1-3 joints, the calyx-teeth similar ascending hairs, and the calyx-tube 3-5 jointed hairs, which are longer rather than more numerous. For records see *Rep. B.E.C.* 1924, p. 625.

Var. PRAECOX (Sole) Menth. Brit., p. 31, t. 13 (1798). Smith Trans. Linn. Soc. v., p. 213 (1800). *M. arvenses* L. γ *M. praecox*. Stem *erect*, simple or branched, with the branches 1-7 in. long, pale green, thinly covered *with very short closely deflexed* hairs, 6-16 in. high; internodes 2-4.5 cm. long. Leaves *elliptic*, or occasionally a few of them oval or oblong *obtuse*, ± attenuate at the base, petiolate, very thinly hairy on both faces, with very short hairs, that is, subglabrous, crenate to shallowly serrate; superficies 3.5-6 × 1.8-2.8 cm.; crenatures and serratures 0.25-0.5 mm. deep, directed forward. Verticils 4-8 towards the top of the stem, a few of the lowest *sometimes* shortly pedunculate. Bracts similar to the leaves, gradually smaller, with a few terminating the stem, and the uppermost acute. The larger bracteoles are lanceolate, and longer or shorter than the flowers. Pedicels glabrous. Calyx-tube thinly covered with ascending hairs of 1-2 rarely 3 joints; teeth triangular, acuminate, rather long for the species, thinly ciliate with similar *short* hairs. Corolla pink, hairy. Stamens included.

M. arvensis, var. *praecox* is allied to the var. *Allionii*, but is more erect, with shorter branches, lighter green, with more obtuse leaves and bracts, and much longer calyx-teeth. River Medway below Tonbridge, 1919, and R. Medway, Yalding, Kent, 1921, *J. Fraser*.

Var. PARIETARIAEFOLIA (Becker). Stem erect, flexuous, liable to get bent or borne down, simple to profusely branched, with long flexuous branches, almost glabrous except towards the top, where it is thinly covered with very short deflexed hairs, 2 ft. long or more; internodes

2.5-5 cm. long; the uppermost nodes of the stem and branches are slightly bearded. Leaves oblong-elliptic, obtuse, ± attenuate at the base, serrated above the middle chiefly, sometimes below it, with a long entire base, thinly hairy, with very short hairs while young, practically glabrous when mature, except for a few cilia on the margin: superficies 4-6.5 × 1.8-3 cm.; serratures 0.25-0.75 mm. deep. Bracts smaller than the lower leaves, and gradually smaller towards the top. Several of the verticils on the stem and branches are shortly pedunculate. Pedicels glabrous or with a few 1-jointed deflexed hairs scarcely visible to a lens. Base of calyx thinly furnished with very short ascending hairs of 1-2 joints, scarcely visible; teeth long, acuminate from a triangular base, thinly ciliate with hairs like the tube. Corolla purple.

The above is the most nearly glabrous of the varieties of *M. arvensis*, judging from my specimens. The hairs on the pedicels (when present), on the base of the calyx and on the teeth are remarkably short, consisting of 1-2 joints. The calyx-teeth are also the longest I have seen amongst the varieties of *M. arvensis*. Symond's Yat, W. Gloucester, 1926, *M. L. Wedgwood*.

Var. CUNEIFOLIA Lej. et Court. Stem erect, ± flexuous, simple or furnished with short or long, slender flexuous branches, green, subglabrous on the lower half, thinly clad with short closely deflexed hairs on the upper half and slightly bearded at the upper nodes, 6-16 in. high; internodes 2.5-4 cm. long. Leaves *lanceolate-elliptic, attenuate and acute at both ends*, thinly sprinkled with very short hairs on both faces, petiolate, finely and acutely serrate, pale apple green; superficies 4.5-6.5 × 2-2.5 cm.; serratures 0.25-1 mm. deep; petioles up to 1 cm. long. Verticils sometimes shortly pedunculate. Bracts similar to the leaves, gradually becoming smaller upwards, but not much shorter. Bracteoles lanceolate, rather shorter than the corolla. Pedicels glabrous, or having a few 2-jointed deflexed hairs near the top. Calyx- tube thinly furnished with 1-4 jointed ascending hairs; teeth *long and slender* from a triangular base, thinly ciliate with 1-2 jointed hairs. Corolla purple, thinly hairy. Stamens exserted.

Easily recognised and distinguished from var. *praecox* and var. *parietariaefolia* by its lanceolate-elliptic leaves, attenuate to a sharp point at both ends, and the pale green colour. For localities see *Rep. B.E.C.* 1924, p. 626.

II. Throat of calyx closed with hairs.

MENTHA PULEGIUM L. Sp. Pl. 577 (1753). *Pulegium vulgare* Miller Gard. Dict. ed. viii., No. 1 (1768). *M. Pulegium* L. Sole Menth. Brit., p. 51, t. 23. Stem prostrate, simple or more often profusely branched, often red, glabrous or subglabrous or finely downy at the base, according to surroundings, more or less densely covered with short, closely deflexed hairs, and long loosely recurving white ones, 6-18 in. long; internodes 1-4 cm. long. Leaves very small, oblong, oval or suborbicular urder dry, exposed conditions, rounded at the ends ± cuneate or sometimes attenuate at the base, thinly and minutely serrate, shortly petiolate, and so shortly puberulous on both faces as to appear glabrous, densely punctate with glands beneath; superficies 0.8-2 × 0.6-1 cm.; serratures 1-6 on each margin, 0.25 mm. deep or less. Verticils all separate, sessile. Bracts like the leaves but gradually smaller, though always longer than the flowers, and the uppermost without flowers. Pedicels densely covered with 1-2 jointed, slightly deflexed and some horizontal hairs or all 1-celled and horizontal. Calyx bilabiate, tubular, furnished with 1-3 jointed, ascending hairs; teeth ciliate with 1-2 jointed hairs; ribs of calyx very strong; throat closed with hairs. Corolla very hairy without, glabrous within, pale to deep purple. Stamens exserted.

Penny-royal cannot be confused with any other Mint. Blackbrook, Dorking, 1902, Earlswood Common, 1904, Stonebridge, Dorking, 1916, Dunsfold Green, 1925, North Holmwood, 1926, all in Surrey, *J. Fraser*.

Var. EXIGUA Huds. Fl. Angl., p. 223 (1762). Flowers verticillate. Leaves lanceolate-ovate, glabrous, acute, *quite entire*. This is Hudson's description, and a specimen in the herbarium of Linnaeus agrees with it.

Var. ERECTA Martyn. Mill. Dict. iv. (1807). Syme Eng. Bot. ed. 3, vii., 24 (1867). *Pulegium erectum* Mill. Gard. Dict. ed. viii., No. 2 (1768). Stem erect, 6-18 in. high, the taller plants chiefly in cultivation, flexuous, sometimes subglabrous near the base or ± densely pubescent throughout with very short, closely or loosely deflexed hairs, simple or profusely branched, with ascending flexuous branches, 1-5 in. long, reddish or green; internodes 1-4 cm. long.

Not by any means a constant variety. In 1914 there were hundreds of plants about 6-12 in. high in a small pool on Limpsfield Common, Surrey, and by 1920 most of them had died and the remainder reverted to the creeping form. In a pool at Stonebridge, Dorking, the plants retained the creeping habit for many years, but a cultivated piece formed a pyramid of branches round a stem 12 in. high with prostrate stolons. St Issey, Cornwall, 1899, *E. C. H. Davies*; Limpsfield Common, 1914, and cultivated from Stonebridge, Dorking, Surrey, 1921, *J. Fraser*.

METHOD OF ARRANGEMENT.

I. Calyx glabrous within.

Page

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**Leaves stalked*; pedicels and calyx hairy, ... 221
***Leaves sessile*; pedicels and calyx-tube glabrous, except in × *M. Nouletiana*, ... 222
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C. Inflorescence verticillate; pedicels and calyx hairy; *leaves large*, ... 230
*Pedicels and calyx hairy; *leaves small*, ... 233
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****Pedicels and calyx-tube glabrous*, ... 237
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II. Throat of calyx closed with hairs.

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By G. CLARIDGE DRUCE.

THIS work is on the same lines as the author's *Flora of Oxfordshire* and the *Flora of Berkshire*, to which it will be a companion volume, and with them will complete the Flora of the Upper Thames province.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

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OF THE

BOTANICAL EXCHANGE CLUB

(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,

T. J. WALL, Esq., B.Sc., M.A.

VOL. VIII. PART II.

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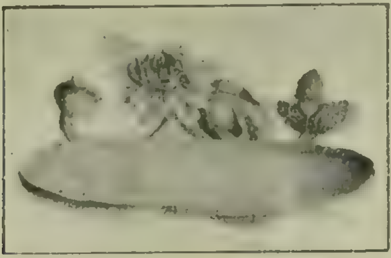

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AUGUST 1927.

REPORT OF THE DISTRIBUTOR FOR 1926.

THE number of plants received for distribution this year was considerably above the average of recent years, this being to a great extent due to the large contributions of North American plants from a new member and of Jersey plants. The actual number of sheets, as will be seen from the detailed list, was 5262, and represented the contributions of 32 members.

The sheets on the whole were well prepared, particularly so in one or two cases, but there were some sheets of critical plants which were insufficient. Dr E. Drabble has pointed out the necessity for sheets of Pansies consisting of complete plants and not scraps. Similarly in the case of Euphrasiae, Mr W. H. Pearsall points out how imperative it is that sheets should carry sufficient plants to justify their labels.

This brings me to the question of labels, which are still in some cases simply scraps of paper, illegibly inscribed, and so small that it is almost impossible to stamp them without rendering them still more illegible. It would assist the Distributor in the purely mechanical work of stamping the labels if members would place all the labels for one gathering together at the beginning of that gathering rather than put one label to each sheet. Once again the Distributor has to deplore the sending in of plants which no one except young students and those making a series can have any use for. Unless there was some special reason to the contrary they were not distributed, and have been omitted from the Report.

The thanks of the Club are once again due to Mrs E. S. Gregory, Drs E. Drabble and G. C. Druce, Messrs A. Bennett, C. E. Britton, J. Fraser, W. O. Howarth, W. H. Pearsall, C. E. Salmon, Rev. H. J. Riddelsdell, and Col. Wolley-Dod for their kindness in supplying notes upon the critical plants contributed.

T. J. WALL.

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LIST OF PARCELS RECEIVED.

	No. of Specimens.
F. S. Beattie,	730
A. Bennett,	9
W. Biddiscombe,	107
Miss R. Bright,	45
C. E. Britton,	187
G. C. Brown,	213
Rev. R. J. Burdon,	181
R. & M. Corstorphine,	48
H. Downes,	28
G. C. Druce,	569
J. Fraser,	84
Miss I. M. Hayward,	62
H. H. Johnston,	137
L. V. Lester-Garland,	15
S. Lindman,	93
J. E. Little,	214
Rev. Bro. Louis-Arsène,	676
J. E. Lousley,	299
R. Melville,	116
W. H. Pearsall,	113
Rev. H. J. Riddelsdell,	85
F. Rilstone,	222
Miss I. M. Roper,	166
C. E. Salmon,	47
W. A. Sledge,	23
R. L. Smith,	193
National Museum of Wales,	114
C. Waterfall,	208
J. W. White,	144
Miss A. Wilkinson,	25
I. A. Williams,	20
A. Wilson,	52
A. H. Wolley-Dod,	37
	5262

Myosurus minimus L. Abundant in a cornfield by Burghfield Church, Berks, May 23, 1926.—J. E. LOUSLEY.

Ranunculus Flammula L., forma *parviflora* Druce. Peaty meadow, Walton-in-Gordano, N. Somerset, August 24, 1926.—I. M. ROPER. "*Parviflora* has flowers ¼ in. across; these are nearly twice as large, so it will not do."—DRUCE.

Ranunculus acris L., var. *Boraeanus* (Jord.). Pasture near Hallen, West Gloucester, May 27, 1926.—J. W. WHITE.

Ranunculus acris L., var. *tomophyllus* (Jord.). Compton Greenfield, West Gloucester, May 24, 1926. This variety had no place in the 9th ed. of the *London Cat.* In the last two editions it stands as a "f" of *Boraeanus*, a most peculiar arrangement seeing that the two plants are perhaps more widely separated by characters than any other two members of the aggregate.—J. W. WHITE.

Aconitum Napellus L. Peper Harrow, Surrey, June 22, 1926.—R. J. BURDON. "This is *A. anglicum* Stapf."—DRUCE.

Fumaria capreolata L., a. *pallidiflora* (Jord.). [Ref. No. X28.] Laneside by King's Mills, Guernsey, June 15, 1926.—J. E. LOUSLEY.

Fumaria Bastardii Bor. (= *F. confusa* Jord.). Waste ground, Plas Crug Avenue, Aberystwyth, Cardigan, June 16, 1926.—C. WATERFALL.

Cardamine amara L. By River Melgum, Forfar, June 23, 1920. The anthers show no sign of the characteristic purple. When the plant was fresh the anthers were a brilliant yellow.—R. & M. CORSTORPHINE. "A curious lax (? shade-grown) form with yellow anthers – forma nova *dubia* mihi."—DRUCE.

Cardamine impatiens L. Bramley, Surrey, June 25, 1926.—W. BIDDISCOMBE.

Cardamine bulbifera Crantz. Vicarage Woods, Mayfield, E. Sussex, April 30, 1926.—A. H. WOLLEY-DOD.

Alyssum incanum L. Waste ground, Barry Dock, Glamorgan, August 1, 1926. Naturalised and increasing every year in this locality.—R. L. SMITH. "Yes; the *Farsetia incana* R.Br."—DRUCE.

Erophila verna E. Meyer, var. *stenocarpa* (Jord.). (=*Draba lanceolata* Neilr.). Below Ingleborough, N.-W. Yorks, May 23, 1926. Number of seeds average 36.—I. M. ROPER. "No; the silicles are not long enough and are too broad for *stenocarpa* which has them 7 mm. × 1.75 mm."—DRUCE. "Hardly *stenocarpa*. Silicles not narrow enough, and scapes are stout. Exactly where it should be placed is more difficult to say."—LITTLE.

Cochlearia groenlandica L. Rocky and shingly shore at Poolewe, West Ross-shire, July 1926. It is very doubtful if we have the true *groenlandica* in Britain, but this is what has been passed for it. It was abundant and fruiting freely.—G. C. Druce.

Brassica Cheiranthus Vill. Sandy places, Corbière, Jersey, June 6, 1926.—L. Arsene.

Brassica nigra Koch. Cliff slopes, Polperro, E. Cornwall, June 3, 1926.—F. Rilstone.

Brassica adpressa Boiss. Sandy places, The Quenvais, Jersey, July 15, 1921.—L. Arsene.

Bursa trevirorum (E. At.). [DD.72]. Henley, Oxon, July 1926.—G. C. Druce.

Capsella Bursa-pastoris Medik., var. *batavorum* E. At. Waste ground, Redland, Bristol, W. Gloster, May 1, 1926.—I. M. Roper. "This is *C. gallica*, teste E. Almquist."—Druce.

Capsella ——. [Ref. No. X.102] Field near Headley, Surrey, October 3, 1926.—J. E. Lousley. "This is *C. patagonica*, teste E. Almquist."—Druce.

Lepidium virginicum L. Waste ground, Radyr, near Cardiff, Glamorgan, August 3, 1925.—R. L. Smith. "These plants are *L. densiflorum* Schrad., teste A. Thellung."—Druce.

Rapistrum rugosum All. A great quantity of this on waste ground, Grays, Essex, July 16, 1926.—R. Melville. "Correctly named. It is a native of S. Europe, and seems to prefer the sea-shores of this country. I collected it on the beach west of Eastbourne, Sussex, in 1886. I have also seen it on the River Medway, Kent, in 1919."—Fraser. "Dr Thellung refers this to the sub-sp. *orientale* (L.) R. & F."—Druce.

Helianthemum guttatum Mill. Rocky or heathy places, Beauport, Jersey, June 8, 1926.—L. Arsene.

Helianthemum polifolium Mill. Brean Down, N. Somerset, May 27, 1926.—H. Downes.

Viola odorata L., forma. Stansteadbury, Herts, April 1926.—G. C. Druce. "Shown me by Miss Trower. The flowers had irregular, small petals of a slight greenish hue, and looked very distinct from ordinary white-flowered *odorata*. It showed no signs of hybridity."—Druce. "*Viola odorata*, without doubt, unusually hairy but with the depressed hairs of *odorata*. Bracts above the middle of peduncle, another pretty constant character of *odorata*. Of the two plants sent to me, one has no stolon, the other, only one short stolon, such as one finds occasionally in examples of *hirta*. I should not be surprised, therefore, if further study proved the violet to be an intermediate, *hirta* × *odorata*."—E. S. GREGORY. "Typical *V. odorata*. The few spreading hairs on the petioles when young are not unusual."—I. M. ROPER.

Viola calcarea Gregory. [Ref. X.97.] Slopes of Box Hill, Surrey, May 15, 1926. This species appears to flower considerably later than *hirta*, as only very few flowers of the latter were to be found on the above date. Apparently the two species do not grow exactly together at this locality. Intermediates were frequent.—J. E. LOUSLEY. "Yes; in the semi-cleistogamous stage. The plant is abundant on Box Hill, one of its earliest recorded stations. Its later flowering than *V. hirta* is mentioned on p. 27 of *British Violets*."—E. S. GREGORY.

Viola Riviniana × *silvestris*, forma *pseudo-silvatica* Beck. [Ref. No. 2858.] Polesden Lacey, Surrey, April 11, 1926. Growing with assumed parent species, with characters fairly intermediate and pollen grains mostly aborted. A fuller note appears in *Journ. Bot.* 325, 1926. —C. E. BRITTON. "Yes; three plants sent, one especially typical."—E. S. GREGORY.

Viola Riviniana × *silvestris*, forma *pseudo-silvatica* Beck. [Ref. No. 2862.] Headley, Surrey, April 25, 1926.—C. E. BRITTON. "Probably right, but not so convincing as the Polesden Lacey specimens."—E. S. GREGORY.

Viola Riviniana Reichb., var. *nemorosa* N. M. W. [Ref. No. 2865.] Ranmore, Surrey, May 2, 1926.—C. E. BRITTON. "Of the two plants sent to me, the habit is more lax than I expect to see in British plants. The flower-characters, however, are entirely convincing."—E. S. GREGORY.

Viola montana × *stagnina* = *V. Gregoriae* mihi. Wood Walton, Hunts, June 1925. In honour of its describer I name this × *Viola Gregoriae*. It was in great beauty in 1925.—G. C. DRUCE.

Viola ——. Hartley's Wood, Elf Hall, S. Cumberland, September 28, 1926. W. H. PEARSALL. "I cannot distinguish this plant from *V. lepida*. The specimens are flowering in the first year and some of them have not developed the twiggy bases of the stems which characterise *lepida*. *Lepida* always flowers in its first season and, if growing in cultivated land where it is liable to be disturbed, it may not perennate."—DRABBLE.

Viola segetalis Jord. Hall Thwaites, S. Cumberland, September 3, 1926.—W. H. PEARSALL. "Yes; thus I named this plant for Mr Pearsall. Some of these specimens are unusually luxuriant, but they are unmistakable. The upright growth and the absence of a dense ashy coating serve to distinguish this plant from *agrestis*."—DRABBLE.

Viola sp. One large plant in a garden at Milton near Bloxham, Oxon, June 21, 1926.—H. J. Riddelsdell. "*V. segetalis* Jord. Not hairy enough for *V. agrestis*. I have seen similar *segetalis* plants sent by Mr W. H. Pearsall from S. Cumberland."—Drabble.

Viola obtusifolia Jord. Ditch side between Ford and Ince Blundell, S.W. Lancs, August 3, 1924.—J. A. Wheldon; comm., National Museum of Wales. "Yes; but some of the specimens approach *segetalis*. The relationship of *segetalis* and *obtusifolia* is a close one."—Drabble.

Viola arvatica Jord. Roanlands, near Elf Hall, S. Cumberland, September 17, 1926.—W. H. Pearsall. "Yes; I named this plant for Mr Pearsall. Some of the specimens are quite typical; others do not show the divaricate peduncles very well."—Drabble.

Viola nana DC. Sand dunes, maritime sands, St Ouen's Bay, Jersey, April 15, 1926.—L. Arsene. "Yes; a useful contribution of well prepared specimens."—Drabble.

Polygala calcarea F. Schultz. Colley Hill, Reigate, Surrey, June 1926.—K. D. Little; comm., J. E. Little. "Undoubtedly; it is plentiful there."—Salmon.

Saponaria officinalis L., double-flowered variety. On bank near sea, Southport, Lancs, September 22, 1926.—R. Bright. "Yes; the form flore pleno."—Druce. "Correctly named. The garden way of writing the name is *S. officinalis*, flore pleno. I have seen it on the sea coast of Sussex, on the R. Medway, Kent, and on some of the Surrey commons, and have always considered it an outcast because it produces no seeds."—Fraser.

Silene gallica L., var. *quinquevulnera* (L.). [Ref. X.19.] West Mount, Jersey, June 16, 1926.—J. E. Lousley. Also from sandy places and roadsides, The Quenvais, Jersey, May 21, 1926, growing often with the type and seeming to be native.—L. Arsene.

Silene Muscipula L. Grain alien, Splott, Cardiff, Glamorgan, July 11, 1926. Most of the specimens are only precocious seedlings, but a few managed to reach a fair size. Like all my plants from Splott, they were growing on allotments.—R. L. Smith. "Yes; under the var. *bracteosa* (Bert.). Dr Thellung names it *S. Muscipula*."—Druce.

Cerastium vulgatum L., forma. [Ref. No. 2347.] Sea wall, West Mersea, N. Essex, May 24, 1926. A very distinct-looking long-petalled form which frequents the sloping sides of the sea walls here. Leaves smaller and of a lighter green than usual, with branches of the inflorescence very long. *C. viscosum* undergoes a somewhat similar modification in these situations.—G. C. Brown. "*C. vulgatum* is a most variable plant and Mr Brown's example is a robust state for which no special name is, I think, needed. The longer petals than usual, the long inflorescence, branches, etc., are very variable features."—SALMON. "This comes under var. *nemorale* (Uechtr.) Dr., a common plant of the fen banks in E. England."—DRUCE.

Cerastium arvense L. Near Newmarket Hill, Sussex, July 25, 1926. —W. BIDDISCOMBE.

Stellaria palustris Retz. Burgh S. Margaret, Norfolk, August 3, 1926.—R. J. BURDON. "The older name is *S. Dilleniana* Moench for the green-leaved and var. *palustris* (Retz.) for the glaucous plant."—DRUCE. "In the dried state the leaves appear to be wholly green, and therefore agree with the var. *viridis* Fr."—I. M. ROPER.

Stellaria ——. Growing rampantly in a wet ditch near Godalming, Surrey, June 5, 1926.—I. A. WILLIAMS. "*S. aquatica* Scop. = *Malachium aquaticum* Fr."—I. M. ROPER.

Arenaria serpyllifolia L., var. *macrocarpa* Lloyd. [Ref. X.1.] Towing path by Hampton Court, Middlesex, May 30, 1926. This seems an approach to *macrocarpa*. The leaves are very broad, the sepals strongly veined and the capsule somewhat large, but the sepals are distinctly glandular. When growing the plant had a very distinct appearance.—J. E. LOUSLEY. "No; not *macrocarpa* (*Lloydii*), differing in its smaller capsules, longer and more patent pedicels, etc. It is nearer to var. *patula* Martr.-Don., which is a non-glandular plant."—DRUCE.

Sagina maritima G. Don. [Ref. No. 2886.] Penrhyn Point, Merioneth, July 1926. A form with dark purple stems and calyces, the stems usually appressed to the sandy soil. This is not to be identified with var. *prostrata* Townsend, whose type-specimens I have seen, which is a comparatively coarse stout form of *S. maritima* in no way to be associated with *S. debilis* Jord. as has been done by Graebner in Asch. & Graebn. Syn. Mitt.-Europ. Fl., 96 Lief, Band v., p. 805.—C. E. BRITTON. "Yes; good typical specimens."—SALMON.

Spergula vulgaris Boenn., var. *nana* Linton. Sandy places near the sea, Le Ouainé, near St Brelade's, Jersey, March 29, 1926.—L. ARSENE.

Polycarpon tetraphyllum L. [Ref. X.31.] Brickwork by pond, Lancresse, Guernsey, June 14, 1926. As this plant is getting very scarce on the S.W. coast of England members may be pleased to have specimens from a locality where it is only too abundant.—J. E. LOUSLEY.

Claytonia sibirica L. As a weed in garden, Southport, Lancs, July 11, 1926.—R. BRIGHT. "Very exiguous material."—LITTLE.

Elatine hexandra DC. Mynydd-y Glen, Glamorgan, October 1926.—G. C. DRUCE & E, VACHELL, *Hypericum dubium* Leers. Banks of Ettrick, near Selkirk, July 1926.—I. M. Hayward.

Hypericum montanum L. Copse at White Down, Surrey, August 26, 1926.—W. Biddiscombe. "Evidently the var. *scabrum* Koch. See Mr Britton's note in *Journ. Bot.* 325, 1926."—Salmon.

Lavatera arborea L. Cliff slopes, Polperro, E. Cornwall, June 14, 1926.—F. Rilstone.

Malva sylvestris L. With white flowers on the cliffs near Rottingdean, E. Sussex, July 17, 1926, among plenty of the normal plant.—H. J. Riddelsdell.

Geranium rotundifolium L. Fruits. Hort. Hitchin. Roadside near Stiffkey, W. Norfolk, July 1926.—J. E. Little.

Geranium lucidum L. Peper Harrow, Surrey, June 22, 1926.—R. J. Burdon.

Erodium glutinosum Dum. [Ref. No. 2875.] Barmouth, Merioneth, July 14, 1926.—C. E. Britton. "Mr Britton, unfortunately, does not give the colour of anthers, pollen or stigma nor the other details suggested in *Journ. Bot.* 126, 1920. These would be invaluable in determining critical forms. In spite of the 2-flowered peduncles, etc., Mr Britton's plant has not the habit, pale stigma, etc., of *glutinosum*, and I should place it under *E. neglectum* without much doubt."—Salmon.

Oxalis latifolia H.B.K. Alien, Mexico. Introduced in fields and persisting on account of its numerous bulbs, Bellozane Valley, Jersey, September 1, 1926.—L. Arsene. "Yes."—Thellung.

Acer campestre L., var. *incisifolium* Dr. Pebmarsh, N. Essex, October 1926.—G. C. Druce.

Medicago apiculata Willd., var. *confinis* Koch Syn. Fl. Germ. et Helv., ed. 3 (1857), p. 142. Cultivated field near Batheaston, Somerset, August 1926. This plant seems to correspond well with Koch's description "spinulis in tubercula, latitudine eorum non longiora, abbreviatis," except that the "abbreviation" has on many of the fruits gone so far that the spines or tubercles have disappeared altogether. It is the most extreme form which I have seen. It was growing in the greatest profusion, forming the bulk of the vegetation but intermixed with a good deal of *M. lupulina* L., and a certain amount of more typical *apiculata*, from one end to the other of a long strip of cultivated ground. Probably a "barley alien" as the ground was said to have been dressed a year or two ago with refuse from a brewery.—L. V. Lester-Garland. "*Confinis* Koch is placed by Burnat under *hispida* Gaertn. as a variety, and more correctly since the spines are much reduced in size. See *Adv. Fl. Tweedside* 54."—Druce.

Melilotus indica All. Fruits. Purwell Field, Hitchin, Herts, August 20, 1926.—J. E. Little.

Trifolium squamosum L. Fruiting specimens. Wallasea Island, Essex, July 12, 1926.—I. A. Williams.

Trifolium striatum L. Bryn-y-mor Road, Aberystwyth, Cardiganshire, June 14, 1926.—C. Waterfall.

Trifolium scabrum L. Cliff slopes, Polperro, Cornwall, June 8, 1926 —F. Rilstone.

Trifolium strictum L. Sandy fields and meadows, La Moye, Jersey, May 18, 1926.—L. Arsene. "Rouy (*Fl. Fr.* v., 90) uses the name *T. laevigatum* Desf. Fl. Atl. ii., 193, for this plant, citing Eng. Bot. t. 2949. He gives no reason for rejecting the Linnean name which dates from the 'Amoenitates,' but quotes *T. strictum* from Waldstein & Kitaibel."—Druce. "Identical with a specimen from St Brelade's, Jersey, collected in 1902, by L. V. Lester. The La Moye specimens are only one-third the height, due to soil and situation."—Fraser.

Trifolium procumbens L. (*T. campestre* Schreber). White Hill, Hitchin, Herts, July 1926. Large plants, up to 2 ft., with 50-60 flowers in a head. Peduncles normally 1½-2ce. as long as the lamina with petiole. On Barton Hills, Beds, August 1926, plants of *T. procumbens*, 2-3 in. high only, had at a little distance very much the appearance of *T. scabrum*.—J. E. Little.

Trifolium filiforme L. (*T. micranthum* Viviani). Cricket field, London Road, Hitchin, Herts, July 1926.—J. E. Little.

Trifolium tomentosum L. Grain alien, Splott, Cardiff, Glamorgan, May 30, 1926. All the plants were growing in one small patch, and quite elegant they looked.—R. L. Smith. "Yes; a plant of the Mediterranean region extending into West Asia. Dr Thellung agrees."—Druce.

Anthyllis Vulneraria L. In several places near Aberystwyth, Cardiganshire, June 1926.—C. Waterfall.

Lotus hispidus Desf. Dry banks and sandy places, St Brelade's, Jersey, June 8, 1926.—L. Arsene.

Lotus siliquosus L. Near Henley, Berks, July 1926.—G. C. Druce.

Astragalus baeticus L. Grain alien, Splott, Cardiff, Glamorgan, September 9, 1926. Dozens of these plants appeared this year, but most of them were not in the ground long enough to flower. Allotment holders are not very partial to "weeds."—R. L. Smith.

Dorycnium hirsutum DC. Waste ground, Cardiff Docks, Glamorgan, July 11, 1926. This makes the third (and last) *Dorycnium* I have sent to the Club. The other two are also still flourishing.—R. L. SMITH.

Colutea arborescens L. Waste ground, Grays, Essex, August 14, 1926. Bladder Senna. Doubtless a garden escape.—R. MELVILLE. "Yes; good fruiting specimens."—DRUCE.

Ornithopus perpusillus L. [Ref. X.30.] Lancresse Quarries, Guernsey, June 14, 1926. The plants of this gathering all have more or less glabrous leaves, while all the British specimens in my herbarium have the leaves covered with fairly long white hairs. I saw no plants like the last in the Channel Islands.—J. E. LOUSLEY. "This comes under var. *glaber* Corb. Fl. Norm. 169, which I have also from Farley Hill, Berks, 1892, and Malvern, but it is evidently rare as there are only two of it in my large set."—DRUCE. "This plant agrees very well with the description of var. *glaber* Rouy Fl. Fr. v., 310, 'Plante de 1-3 décimètres, entièrement glabre ou presque glabre; folioles elliptiques; légumes glabres.' As it is not entirely devoid of pubescence, this plant cannot be var. *glaber* Corb. Nouv. Fl. Normandie, which is described as 'plante entièrement glabre, y compris les fruits.' Mr Lousley's plant appears more pubescent than it really is, owing to the presence of hair-like hyphal strands of a mould."—BRITTON.

Vicia calcarata Desf. [Ref. No. 2384.] Waste ground by maltings, etc., Hythe Quay, Colchester, N. Essex, July 4, 1926. Varying greatly in the width of the leaflets on the same plant. Flowers 1 to 3 on peduncles, purplish, fading to blue. Apparently nearest this.—G. C. BROWN. "Dr THELLUNG agrees."—DRUCE.

Vicia ——. [DD. 741.] Frilford, Berks, June 1926. This is the var. *nemoralis* Pers. of *sativa*, teste M. P. de RIENCOURT.—G. C. DRUCE.

Vicia hirsuta Gray. Roanlands, near Elf Hall, S. Cumberland, September 14, 1926.—W. H. PEARSALL.

Vicia lutea L. [Ref. X.67.] Abundant on shingle, Dungeness, E. Kent, June 23, 1925.—J. E. LOUSLEY.

Vicia lutea L. ? [Ref. No. 2383.] Waste ground, Hythe Quay, Colchester, N. Essex, June 13, 1926. Mr Melville, who saw this with me *in situ* in August, at first thought it was best referred to *Vicia vestita*, but it seems difficult to keep it apart from *V. lutea*, under which in the absence of description and fuller material, I am leaving it.—G. C. BROWN. "Is the var. *caerulea* Arch."—THELLUNG.

Vicia sativa L., var. *nemorosa* Pers. [DD. 446.] Reading, Berks, June 1926.—G. C. DRUCE.

Vicia angustifolia Roth, var. Polperro cliffs, E. Cornwall, June 8, 1926. This form of *Vicia angustifolia* with flowers usually solitary is what in Cornwall was formerly called var. *Bobartii* Koch, but I understand British plants are no longer so named. The leaflets vary greatly in relative width.—F. RILSTONE.

Vicia angustifolia L., var. *Garlandii* Druce. [Ref. X.13.] St Ouen's Bay, Jersey, June 20, 1926.—J. E. LOUSLEY.

Lathyrus Nissolia L. Redstone Wood, Redhill, Surrey, 1860.—J. LINNELL; comm., C. E. SALMON. "For some particulars respecting John Linnell see *Rep. Wats. B.E.C.* 1925-6, p. 336."—C. E. S. "A fine form of it."—BENNETT.

Lathyrus Nissolia L. On heavy clay soil amongst grasses and other rank vegetation. One gathering from Fair Oak Lane, near the Brighton Road, June 20; the other from the south-west end of Surbiton, by the new road from Raynes Park to Esher, Surrey, June 27, 1926. The two stations are about 2½ miles apart as the crow flies.—J. FRASER.

Rubus idaeus L., var. *obtusifolius* (Willd.). Beacon Hill, above Shepton Mallet, N. Somerset, June 19, 1926. I. M. ROPER. "A weak plant of typical *R. idaeus* L."—RIDDELSDELL.

Rubus plinthostylus Génév. [Ref. No. 411.] Rocky hillside, Langreek, Polperro, E. Cornwall, July 13, 1926.—F. RILSTONE. "I am doubtful of this. It answers in detail to Rogers's description of *hirtifolius*, and may be an open poor ground form of it. But it seems rather like a hybrid (as indeed *hirtifolius* may be), and if named *hirtifolius*, must be ? *hirtifolius* M. & W., form."—RIDDELSDELL.

Rubus mucronatoides Ley. [Ref. No. 404.] Polperro, E. Cornwall, June 22, 1926.—F. RILSTONE. "*R. mucronatoides* Ley, f. This name is certainly (to my mind) correct. I have seen Ley's plant growing this year in Herefordshire, and have now no hesitation. The Cornish plant is a strong-growing form, strongly emphasising most of Ley's descriptive points, even to the strange and wild variations of panicle outline, though the glandular development is greater on stem and less on the panicle, and the sepals rise rather more, etc. But the differences are not enough to speak of 'variety.' I call it *mucronatoides* Ley, f."—RIDDELSDELL.

Rubus Borreri Bell-Salt. [Ref. No. 408.] Roadside near Sandplace Station on way to Duloe, E. Cornwall, July 7, 1926.—F. RILSTONE. "*R. Borreri* Bell-Salt., more glandular than usual. Material weak, poor and undeveloped, but correctly named."—RIDDELSDELL.

Rubus melanodermis Focke. [Ref. No. 406.] Roadside, West Looe, E. Cornwall, July 7, 1926.—F. RILSTONE. "Yes; *R. melanodermis* Focke, slightly off type."—RIDDELSDELL.

Rubus melanodermis Focke, f. [Ref. No. 429.] Roadside near Tregantle, E. Cornwall, July 17, 1926.—F. RILSTONE. "This must go under

R. melanodermis Focke as a form. It tends to go off towards *cenomanensis* Sudre in panicle, but in everything else, as far as I can see, it comes best under *melanodermis*."—RIDDELSDELL.

Rubus scaber Wh. & N. [Ref. No. 431.] Rocky hillside, Langreek, Polperro, E. Cornwall, July 21, 1926.—F. RILSTONE. "This is a very puzzling plant which I eventually put, with some hesitation, to *R. scaber* Wh. & Nees (in an aggregate sense). It cannot be called typical in its very unequal prickles and strongly cordate leaves, nor is it as glandular as we might expect. If it goes here, it must be as a form."—RIDDELSDELL.

Rubus hystrix Wh. & N. [Ref. No. 405.] Roadside near Trevarder, between Polperro and Polruan, E. Cornwall, June 28, 1926.—F. RILSTONE. "This is *R. hystrix*, in rather a slender form, I feel sure. The stem certainly agrees well, but better developed panicles might help to certainty."—RIDDELSDELL.

Rubus plinthostylus Génév. [Ref. No. 1411.] Rocky hillside, Langreek, Polperro, E. Cornwall, July 8, 1926.—F. RILSTONE. "I find that I had removed this to *plinthostylus* Génév. (according to Bab.). The stem is more *echinatus*-like than usual, more removed from the usual *plinthostylus* of Cornwall. But it must go there as a form, and not to *mutabilis*."—RIDDELSDELL.

Potentilla erecta × *reptans* ? [Ref. No. 2348.] Tiptree Heath, N. Essex, June 3, 1926. One large clump only. Exactly matches my No. 592 (1914) from another part of the heath, named as above by Dr Druce. *P. erecta* is abundant in several states.—G. C. BROWN.

Potentilla reptans L., var. *microphylla* Tratt. In turf, St Thomas's Head, Woodspring, N. Somerset, July 20, 1926.—I. M. ROPER. "This is what I have been calling the var. *microphylla* Tratt., but specimens I lifted from hard ground and grew for some years in the garden grew as large as the type, and I was wondering if other collectors have had a similar experience."—FRASER.

Alchemilla connivens Buser. Discovered at Dalnaspidal in 1922 and grown on in my garden ever since. Note the slender, graceful habit, the deeply cut stem-leaves. See *Journ. Bot.* 225, 1925. Hort. Reigate, May and June 1926.—C. E. SALMON.

Rosa canina L., var. *insignis* Déségl. & Rip. Hedge, Almondsbury, W. Gloster, June 25, and September 13, 1926. Flowers pale rose.—I. M. ROPER. "The strong biserration is fatal to *insignis* (which Déséglise and Ripart described as a species, not as a variety). This is quite good var. *leiostyla* Rouy."—WOLLEY-DOD.

Rosa canina L., var. *andegavensis* Desp. [Ref. No. 2949.] Leatherhead Downs, Surrey, August 5, 1926.—C. E. BRITTON. "Correctly named and fairly typical."—WOLLEY-DOD, *Rosa canina* L., var. *surculosa* Hook. Border of Norton's Wood, Walton-in-Gordano, N. Somerset, September 9, 1926.—I. M. Roper. "I should call this a small-leafleted, compact form of var. *andegavensis*, decidedly off type. Var. *surculosa* is a strongly developed, large, coarse form, the antithesis of this, with many flowers in a cluster, very unlike this specimen."—Wolley-Dod.

Rosa micrantha Sm. Polperro, E. Cornwall, fruits, September 30, 1925; flowers, June 1926.—F. Rilstone. "Certainly a form of this, but with little of its usual appearance. Its chief features are the broadly ovoid, almost subglobose fruit, and the entire absence of prickles, but I can give it no definite name. Perhaps larger specimens might be helpful. Small fragments are never of much value for naming Roses."—Wolley-Dod.

Sorbus Aria Crantz. In good and plentiful fruit near the Four Shire Stone, E. Gloster, August 3, 1926.—H. J. Riddelsdell. "Yes; the narrow-leaved form."—I. M. Roper.

Crataegus sp. A small tree, some 12 feet high, along with *C. oxyacanthoides*. Planted, but in a wild spot, near Storrington, W. Sussex, July 15, 1926.—H. J. Riddelsdell.

Cotoneaster Cotoneaster (L.). From Orme's Head, Carnarvon, June 1926.—G. C. Druce.

Parnassia palustris L., var. *condensata* Travis & Wheld. Sand hills near Southport, Lancs, September 1911.- G. C. Druce. Also from Birkdale, S. Lancs, August 23, 1924.—J. A. Wheldon; comm. National Museum of Wales.

Callitriche intermedia G. F. Hoffm. Near Lyndhurst, Hants, June 1926.—G. C. Druce.

Callitriche autumnalis L. Spiggie, Zetland, July 1926.—G. C. Druce.

Lythrum Hyssopifolia L. Inundated or very damp places, St Catherine's Bay, Jersey, August 1, 1926.—L. Arsene. Also sent from the same locality by J. E. Lousley.

Epilobium ——. [DD. 891.] Hanslope, Bucks, September 1926. This must go under *parviflorum*, and Dr Thellung agrees.—G. C. Druce. "*E. parviflorum* Schreb."—I. M. Roper.

Epilobium montanum L. [680.] L.N.E.R. Station chalk pit, Hitchin, Herts, July 22, 1926. Growing with *E. montanum* [694] and *E. parviflorum*. The two points which make me doubtful whether [680] is pure *E. montanum* are the narrower leaves and especially the leaf-margins. The latter show short processes more akin to those of *E. parvi-*

florum. In [694] there are deep irregular rounded sinuses, which are characteristic of *E. montanum*.—J. E. **Little**.

Epilobium montanum L. [694.] L.N.E.R. Station chalk pit, Hitchin, Herts, September 10, 1926. I send [694], about which there cannot, I think, be any doubt, for comparison with [680]. Plants of the latter character, in this same station, have puzzled me for a good many years.—J. E. **Little**. "[680] and [694] are *Epilobium montanum* × *parviflorum*, [694] being super-*montanum*, teste A. **Thellung**."—**Druce**.

Epilobium lanceolatum Seb. et Maur. Fyfield, Essex, July 14, 1926. Stigma 4-cleft. Dr Druce tells me this is a New County Record. I did not find the plant in sufficient quantity to warrant picking more than a very little. I send one specimen, however, as a voucher for the record. Another specimen is in the Brit. Mus. Herbarium.—I. A. **Williams**.

Epilobium tetragonum Curt. L.N.E.R., near Nine Springs, Hitchin, Herts, August 23, and September 28, 1926. This plant is not frequent in the Ivel basin, but *E. obscurum* is still more infrequent. Neither is recorded for this district in Pryor's *Fl. Herts*. Cf. *Wats. B.E.C. Rep.* 174, 1921.—J. E. **Little**. "Linnaeus is the authority (in an aggregate sense)."—**Druce**.

Bupleurum tenuissimum L. Hayling Island, Essex, August 1922.—G. C. **Druce**. "Yes; no doubt a clerical error for Hampshire. The plant is well known there."—**Salmon**.

Oenanthe pimpinelloides L. Pasture on Ursleigh Hill, near the Wansdyke, N. Somerset, July 16, 1926.—J. W. **White**.

Oenanthe Lachenalii C. Gmel. Back of R. Rhymney, near Cardiff, Glamorgan, July 22, 1926.—A. E. **Wade**; comm. **National Museum of Wales**.

Caucalis latifolia L. Waste ground by maltings, in immense numbers, Hythe Quay, Colchester, N. Essex, June 13, 1926.—G. C. **Brown**. "Yes; the *Turgenia latifolia* Hoffm., assented to by Dr **Thellung**."—**Druce**.

Linnaea borealis L. Near Grantown, Elgin, June 1925.—G. C. **Druce**.

Lonicera Xylosteum L. Planted and well established on the Great Tew Estate, Oxon, April 17, 1926.—H. J. **Riddelsdell**.

Galium Mollugo L. [Ref. No 3479.] Artificial grass lawn in a garden, Established Church Manse, Hoy, Orkney, Scotland, August 4, 1926.—H. H. **Johnston**. "The panicles are narrow and the cymes not strongly reflexed. To me it recedes towards *erectum*."—**Druce**.

Galium palustre. Burgh St Margaret, Norfolk, August 20, 1926.—R. J. **Burdon**. "I think the var. *lanceolatum* Uechtr."—**Druce**.

Galium uliginosum L. [Ref. No. 2921.] Littleworth Common, Surrey, August 8, 1926.—C. E. **Britton**.

Scabiosa maritima L. Dry hillsides, L'Etac, Jersey, June 26, 1926.—L. **Arsene**. "Is this not *S. atropurpurea* L.? I believe J. Piquet sowed the seeds of *maritima* and some other French plants at St Ouen's. He showed it me there. It had whitish flowers, and has now disappeared."—**Druce**.

Aster sp. Garden escape or outcast, Horley, Oxon, September 2, 1926.—H. J. **Riddelsdell**. "Under *A. lanceolatus*, teste A. **Thellung**."—**Druce**.

Aster ——. [DD. 842.] Port Meadow, Oxford, October 1926.—G. C. **Druce**.

Erigeron bonariense L. Waste ground, Cardiff Docks, Glamorgan, September 10, 1925. This plant is quite at home with us, and is increasing yearly. There is an excellent figure of it in the "Adventive Flora of Tweedside."—R. L. **Smith**. "Yes."—**Thellung**.

Galinsoga parviflora Cav. [Ref. X. 90.] Waste ground at Eastfields, near Mitcham, Surrey, October 1, 1926. This plant is so abundant in the fields of this district, where it has been known to my knowledge since 1915, that it has become an absolute pest. Some of the labels were accidentally typed "Southfields" instead of "Eastfields."—J. E. **Lousley**.

Ambrosia trifida L. Waste ground, Dagenham, Essex, August 27, 1926.—R. **Melville**.

Hemizonia pungens Torr. & Gray. Colchester, Essex, October 1926.—G. C. **Druce**.

Anacyclus clavatus Pers.? [Ref. No. 2349.] Waste ground, by maltings, Hythe Quay, Colchester, June 13, 1926. Apparently this, but impossible to determine in the absence of fruit, none of the plants having survived to the fruiting stage.—G. C. **Brown**. "Yes; *A. clavatus*."—**Thellung**.

Cotula coronopifolia L. Leasowe, Wirral Peninsula, North-west Cheshire, August 22, 1908.—**Charles Bailey**; comm. G. C. **Druce**.

Artemisia vulgaris L. Lane side, between the River Dee and Farndon, Cheshire, August 11, 1926.—C. Waterfall.

Senecio lanuginosus Trow. Sand dunes, The Quenvais, Jersey, April 4, 1926.—L. Arsène.

Senecio erraticus Bertol. New Forest, S. Hants, October 1926. Originally found by Mr Colin Trapnell, by whose direction I gathered it this October, and saw plenty growing with *S. Jacobaea* and *S. aquaticus*. From the latter its smaller anthodes and more straddling habit distinguish it. In France it appears to be common and more widely spread than *aquaticus*. See *Rep. B.E.C.* 996, 1925. Dr Thellung agrees to the identification.—G. C. Druce.

Onopordon Acanthium L. Waste ground, Grays, Essex, July 16, 1926.—R. Melville. "The var. *viride* Mich., which is always a casual in this country."—I. M. Roper.

Serratula tinctoria L. Bishops Wood, near Prestatyn, Flint, August 28, 1926.—C. Waterfall.

Centaurea pratensis Thuill. Dry places, sands of St Ouen's Bay, Jersey, July 15, 1926.—L. Arsène. "An excellent specimen of typical *pratensis*."—Britton.

Centaurea aspera L. Dry places, sandy hillsides and dunes, locally abundant, St Ouen's Bay, Jersey, July 15, 1926.—L. Arsène.

Carthamus tinctorius L. Waste ground, Yiewsley, Bucks, August 6, 1926. The florets of this plant form the "cake saffron" of commerce, which was formerly used to extract the red pigment for preparing theatrical rouge and for dyeing.—R. Melville. "Correct. In the 18th century much grown in Gloucestershire to colour pastry and feed poultry. It appeared as a casual round Bristol during the Great War."—I. M. Roper.

Crepis nicaeensis Balb. Near Forfar, July 1926.—G. C. Druce. I am afraid this will have to go to *C. capillaris* Wallr., var. *anglica* Druce & Thell.—G. C. Druce.

Hieracium Pilosella L. Densely silky form, Tredudwell, near Fowey, E. Cornwall, June 1926.—F. Rilstone.

Hieracium pratense Tausch. (*collinum*). Growing plentifully on private pasture-land, near Galashiels, Selkirk, July 6, 1926.—I. M. Hayward.

Hieracium vulgatum (Fr.) Almq. Mellon Charles, W. Ross, July 1926. Det. H. Dahlstedt.—G. C. Druce.

Hieracium ——. Parkhurst, Lurgashall, W. Sussex, June 18, 1926. —R. J. **Burdon.**

Hieracium ——. Lurgashall, W. Sussex, August 31, 1926.—R. J. **Burdon.**

Hieracium ——. [Ref. X. 98.] Railway cutting between Hayes and West Wickham, on Greensand, West Kent, October 10 and 24, 1926. The vegetation on these banks was cut down early in the year, and the growth of the plant may not be quite typical. Fresh leaves were very few.—J. E. **Lousley.**

Hieracium rubicundiforme Zahn. [DD. 991.] Hort. Oxford ex Clova, Forfar, August 1926.—G. C. **Druce**; teste **Roffay.**

Hieracium hypochoeroides Gibson (*H. Gibsoni* Backh.). Origin—Limestone crags, Settle, Yorks, per Rev. W. Hunt Painter, cult. at Clifton, July 7, 1925.—J. W. **White.**

Hieracium lucidulum Ley. [DD. 95.] Near Henley, Oxon, July 1926. Not typical. Dahlstedt refers it to a form of *melanolepis*.—G. C. **Druce.**

Hieracium diaphanum Fr. Railway-bank, Longridge, N.E.R., Preston, W. Lancs., July 25, 1891.—C. **Bailey**; comm. G. C. **Druce.**

Taraxacum Johnstonii Dahlstedt in *Rep. B.E.C.* 744. 1922. [Ref. No. 2911.] Grassy banks at roadside, Tou, Wasbister, Rousay, Orkney, May 8, 1925. Also [2951] from east-north-east side of Inner Holm of Stromness, Orkney, June 5, 1925.—H. H. **Johnston.**

Sonchus arvensis L., var. *laevipes* Koch. [Ref. No. 2961.] Kingswood, Surrey, September 12, 1926. In this var. the peduncles are devoid of stalked glands or setae and the involucre either the same or provided with stalked glands to a smaller extent than usual. The plants distributed share the latter character.—C. E. **Britton.**

Lobelia urens L. Hinton Amiral, S. Hants, September 1926.—G. C. **Druce.**

Wahlenbergia hederacea Reichb. Near Ro Wen, Carnarvonshire, August 17, 1926. Frequent in boggy ground from 250 to 1500 feet.—A. **Wilson.** "The older name is *Cervicina hederacea* (L.).—**Druce.** Also from Royal Common, Surrey, August 26, 1926.—W. **Biddiscombe.**

Gaultheria Shallon Pursh. Flowerdale, W. Ross, July 1926. —G. C. **Druce.**

Erica ciliaris L. Silverwell Moor, St Agnes, W. Cornwall, August 1926.—F. **Rilstone.**

Erica vagans L. The Lizard. West Cornwall, August 1912.- C. C. Vigurs and H. H. Harvey; comm. F. Rilstone.

Armeria plantaginea Willd. Sand dunes, abundant, The Quenvais, July 5, 1926.—L. Arsene. "Yes; *Statice plantaginea.*"—Druce.

Lysimachia vulgaris L. Ditch, Berrington, Salop, July 31, 1926.—A. Wilkinson.

Erythraea Centaurium Pers. var. *ellipticum* Druce. Dry places, cliffs and maritime sands, The Quenvais, Jersey. June 21, 1926.—L. Arsene. "I should like to see this in a fresh state. I think it comes under var. *conferta.*"—Salmon. "I described it under its proper generic name, *Centaurium*, not under the invalid *Erythraea.*"—Druce.

Gentiana Pneumonanthe L. Chobham Common, Surrey, August 1926.—W. Biddiscombe. "Yes; but I am sorry to see this beautiful plant sent to Exchange Clubs from our county. It is becoming far too scarce."—Salmon.

Gentiana campestris L., agg. Little Sand, West Ross, July 1926.—G. C. Druce.

Gentiana ligulata C. A. Ag., var. *praecox* Towns. [Ref. X. 4.] Banstead Downs, Surrey, May 28, 1926. Although *G. Amarella* was abundant in most parts of the Downs in August 1926, I was unable to find it in the exact locality where the present specimens were taken.—J. E. Lousley. "This is given as *G. lingulata* C. A. Ag., var. *praecox* Towns in *L.C.*, ed. xi."—Wall. "Undoubtedly. Rather small examples, but they show well the long, stalked flowers, etc., of this plant."—Salmon.

× *Symphytum densiflorum* Bucknall. (*S. officinale* β *purpureum* × *peregrinum*). Right bank of the river Chew, near Chew Magna, N. Somerset, June 1, 1926.—J. W. White.

× *Symphytum discolor* Bucknall. (S. *officinale*, α *ochroleucum* × *peregrinum*). By the leat at Gatcombe Mill, N. Somerset, May 14-24, 1926. When growing the distinctive features of these handsome hybrids can be readily recognised. In the dried state, while leaf-characters and the asperous clothing of stem and calyx remain unaltered, the pale rosy or bluish-tinted white flowers of *S. discolor* turn to a slaty grey, and the large reddish-violet corollas of *S. densiflorum* become dark purple even when pressed with the greatest care. The two now distributed, together with some others, were described by Bucknall in his "Revision of the Genus Symphytum" (*Journ. Linn. Soc.* Vol. xli., December 1913). They cannot be of frequent occurrence, as, so far as I know, neither *discolor* nor *densiflorum* have been recorded from localities other than those in the counties of Gloucester and Somerset mentioned by the author in the "Revision."—J. W. **White**.

Symphytum peregrinum Ledeb. Peper Harrow, Surrey, June 22, 1926.—R. J. **Burdon**.

Myosotis sicula Guss. Damp, rocky or sandy places, banks of an old quarry near Portelet, Jersey, July 20, 1926. It is a small plant near *M. caespitosa* Schultz. It grows in Corsica, and is found in Loire-Inférieure, France, where I collected it 30 years ago. Dr Druce says (*Report* 886, 1925) Rouy refers this plant to his var. *confusa of Myostis multiflora.* Coste and Lloyd call it *M. Sicula.* The plant was far from being so fine this year as it was last year, on account of the height of the water in the Pond at Portelet. It is the reason why the specimens are rather poor.—L. **Arsene**. "Correct. My sheet shows some of the fruiting pedicels reflexed; a character mentioned in Gussone's original description and which was apparently lacking in the specimens collected by A. J. Wilmott in 1924. I do not agree with Rouy in separating the French plant from the Sicilian *M. sicula.*"—**Wade**. "Very welcome specimens. One would like to know if the Jersey plants are annual or biennial."—**Druce**.

Echium plantagineum L. Native, dry hillsides, Beauport, Jersey, June 8, 1926.—L. **Arsene**.

Cuscuta europaea L. Burpham, Guildford, Surrey, August 26, 1926.—W. **Biddiscombe**. "I agree. Hitherto I have frequently seen it growing upon the common Nettles and on the Hop on or near the banks of Surrey rivers, but not on Rubus.—**Fraser**.

Solanum Dulcamara L., var. In a lane at Hook Norton, Oxon, July 31, 1926. A very grey, tomentose variety, with startling distinct appearance among the normal bushes in the vicinity. Is this var. *villosissimum* Desv. of C. E. Britton's note in *Rep. B.E.C.* 1051, 1925?—H. J. **Riddelsdell**. "Var. *tomentosum* Koch."—**Druce**. "The var. *tomentosum* Koch. *Cf.* the plant sent by Mr J. W. White.—I. M. **Roper**.

Solanum Dulcamara L., var. *tomentosum* Koch. (Var. *villosissimum* Desv.; *S. littorale* Raab.) Among bushes above Broad Mayne, Dorset, at 400 feet, five miles from the coast, June 20, 1926. Although disregarded by many British botanists, including the compilers of the recent *Lond. Cat.*, this seems well worthy of recognition as a variety. It is so closely covered with patent hairs as to attract attention by its greyish hue and to feel velvety to the touch. The var. *marinum* Syme (or Bab.) is a fleshy prostrate form of coast shingle, differing also by its incurved hairs. It seems remarkable that there appears to be no record of the plant having been distributed between 1872, when it was sent from Oxfordshire by the late Prebendary H. E. Fox, and 1925.

when specimens reached the Club from both Mr Britton and Dr Druce. Neither Townsend nor Mansel-Pleydell mentions it in their respective Floras of Hants and Dorset.—J. W. WHITE.

Linaria supina Desf. Par, E. Cornwall, September 25, 1913.—C. C. VIGURS; comm. F. RILSTONE.

Scrophularia Scorodonia L. Very common in hedges and on banks, not rare on walls, Highlands College, Jersey, July 1, 1926.—L. ARSENE.

Mimulus guttatus DC., var. In great quantities by the river near Clatterin' Brig, Kincardine, July 1926. I think this must be *M. guttatus* DC., var. *Youngana* (Hook.) Druce. See *Rep. B.E.C.* 298, 1921. It formed a beautiful sight from its reddish coloured blossoms. It fringed the burn for a mile.—G. C. DRUCE.

Veronica Chamaedrys L., var. *lamiifolia* Beck. [Ref. No. 2868.] Headley, Surrey, June 20, 1926. This variety is described by its author as distinguished by the leaves of the flowering stems being shortly but distinctly petioled. Under this varietal name Beck placed three plants originally described as species. As two of these may be expected to reward search, their characters and those of restricted *V. Chamaedrys* are given:—(1) *V. Chamaedrys* L.—Hayne defined this as with lower leaves ovate, petioled, the upper leaves cordate-ovate, sessile; racemes opposite, arising from the axils of the upper leaves and exceeding the stem. (2) *V. lamiifolia* Hayne—Leaves cordate with a cuneate base, the lower sessile, the remainder petioled; racemes opposite, arising from the axils of the lower leaves, and scarcely exceeding the stem. (3) *V. Rudolphiana* Hayne—Leaves cordate-ovate, the lower sessile, the remainder petioled; racemes alternate, arising from the axils of the lower leaves, and shorter than the stem. English plants resemble *V. lamiifolia* Hayne and *V. Rudolphiana* Hayne in leaf-characters, but the features of opposite and alternate racemes do not appear to be fixed characters.—C. E. BRITTON.

Euphrasia borealis Wettst. Buddon, Dalescord, Ronas, Whiteness, Zetland, August 1924.—G. C. DRUCE.

Euphrasia brevipila Burn & Gremli, f. *subeglandulosa*. [566.] August 19, 1923; September 1925, and September 20, 1926. See *W.E.C. Report* 343, 1925. This was determined as above by Messrs Pearsall and Lumb. Mr Salmon, I think, agrees. Mr H. W. Pugsley is doubtful.—J. E. LITTLE. "These plants are remarkable in many ways. They have evidently grown in a very congenial environment, for they are perfectly and uniformly developed in every particular. As they are, in addition, excellently presented, they are unusually acceptable. They possess one very exceptional characteristic—the foliage is extremely thin and transparent in texture. They represent a form which has frequently been distributed through the B.E.C.—especially during the years preceding 1923

—from Devon, Cornwall, and other places. This form is marked by the *nemorosa*-like character of its foliage. It cannot, however, be that species. In this case, the size of flowers, the texture of the foliage, the long sub-parallel and erect branches—as well as the large capsules—are against it. The general habit is certainly not that of *E. borealis*—which, moreover, has normally leaves of thick and coriaceous texture with teeth very different from these. *E. Kerneri* sometimes produces rather similar very pale flowers, and possesses foliage of thin texture, but the leaves and bracts are of quite different shape, and have teeth much longer and narrower than these. It rarely, if ever, grows to the height of these plants and has a quite different habit. Apart from the absence of glands, the plants are typical *E. brevipila*, and, in my opinion, are best referred to Townsend's f. *subeglandulosa* of that species."—PEARSALL.

Euphrasia ——. Burgh St Margaret, Norfolk, August 17, 1926.—R. J. BURDON. "The large flowers, only slightly branched stem, and long, narrow, truncate mature capsules point to *E. brevipila*. The foliage is, however, eglandular, although otherwise more or less typical of that species. The two plants submitted are, I think, rather slender examples of *E. brevipila*, f. *subeglandulosa* Towns."—PEARSALL.

Euphrasia nemorosa H. Mart. [Ref. No. 98.] Dry grassy hillside, Polperro, E. Cornwall, July 23, 1926.—F. RILSTONE. "It is, perhaps, not yet sufficiently recognised that many British species of *Euphrasia*, which are normally glandular, possess also an eglandular form. This is the case with *brevipila*, *latifolia*, *occidentalis*, and *Vigursii*—among others less well-known. On the other hand, at least two species, normally eglandular, may occasionally be found furnished with numerous or scanty glandular hairs—*E. nemorosa*, and to a lesser extent, *E. borealis*. I have undoubted examples of each of these species upon which glandular hairs are plainly visible, and have also seen them in other herbaria. Of the six plants upon Dr Druce's sheet of this gathering, two (Nos. 1 and 3) are well furnished with slender short-stalked glands, but all the plants are obviously *E. nemorosa*. All this goes to show how imperative it is that sheets submitted for determination should carry sufficient plants to justify their labels. Mr Rilstone's sheets always do this."—PEARSALL.

Euphrasia nemorosa Pers. [681.] Gravel pit, Barbon Hills, Beds, August 19 and 27, 1926.—J. E. LITTLE. "*E. nemorosa*."—PEARSALL.

Euphrasia nemorosa Pers., var. *ciliata* Drabble. Hawkshead Hills, W. Lancashire, August 13, 1926.—W. H. PEARSALL.

Euphrasia nemorosa Pers., var. *ciliata* Drabble. Elf Hall, S. Cumberland, August 14, 1926.—W. H. PEARSALL.

Euphrasia occidentalis Wettst. Grassy hillside, Polperro, E. Cornwall, July 14 and 23, 1926.—F. RILSTONE. "The best sheet of examples of this species I have ever examined. The plants are very glandular and show abundance of the characteristic unequal glands of the species. Some are as short as those of *E. brevipila*, many are much longer, and all are unusually stout."—PEARSALL.

Euphrasia gracilis Fr. Downs between St Agnes Beacon and the sea, W. Cornwall, August 27, 1926.—F. RILSTONE. "Robust *E. gracilis*, very similar to No. 2054."—PEARSALL. "The older name is *E. micrantha* Reichb."—DRUCE.

Euphrasia atroviolacea G. C. Druce & D. Lumb. in *Rep. B.E.C.* 49-50, 1923. [Ref. Nos. 3485 and 3486.] Natural, grassy, shell-sandy pasture at seashore, Links of Boardhouse, Birsay, Mainland, Orkney, August 10, 1926.—H. H. JOHNSTON. "Small, much branched compact plants of peculiar habit. The stem is usually very flexuose, the branches widely spreading, variously arcuate, occasionally looped, often crossing the stem and frequently secund. In many of the plants there is evidence of the stem or branches having been bitten off, and this accounts, in great measure, for their congested habit. The spikes are normally condensed and the upper bracts densely imbricated. The margins of the bracts are rough with short, broad-based incurved setulae. The upper teeth of each bract are usually ovate acute, non-aristate and frequently 2, 3, or even 4-fid at the apex, but the lower teeth are often shortly and opaquely aristate. The upper bracts are, as a rule, very thin in texture and the lower bracts early caducous, leaving the glabrous base of the calyx visible. The glandular hairs (in both 3485 and 3486) are extremely few in number, but undeniably present, and may be found scattered singly—or occasionally in small clusters—on the leaves, bracts and calyx-teeth. They are most readily seen on the nerves of the under surfaces of the bracts—rather than on the margins. The capsules are relatively short, broad, and elliptical—scarcely narrowed upward and usually tapering slightly more at the base than at the apex, which is commonly emarginate. The plants differ markedly from known British species. The flowers most resemble those of *E. Vigursii*, but are much more uniform in size. The habit of *E. Vigursii*, and also its distribution—Cornwall and Devon—are quite distinct. The glandular hairs of *E. atroviolacea* are shorter and more uniform in size than those of any other British species. Those of normal *E. brevipila* are distinctly longer, those of *E. Vigursii* are unequal in length—some relatively short and straight, others long and flexuous—but the shortest of them are much longer than those of *E. atroviolacea*. These plants are very similar to those distributed in 1925 [Ref. Nos. 3103 and 3104] and are most acceptable."—PEARSALL.

Euphrasia ——. [Ref. No. 2.] Moorland pasture, near Prestatyn, Flint, August 28, 1926.—C. WATERFALL. "One much branched plant, which is mouldy but may be *E. Kerneri*."—PEARSALL.

Euphrasia gracilis Fr. [Ref. No. 1.] Drybank near Meliden Station, near Prestatyn, Flint, August 21, 1926. I am venturing to call this *Euphrasia gracilis* Fr. because, to my thinking, it agrees very well with the description given in the 9th edition of Babington's "Manual," and also it agrees very well with specimens of *Euphrasia gracilis* Fr. that are in my herbarium which I have received from various members of the Botanical Exchange Club.—C. **Waterfall.** "Only one plant. The whole gathering might possibly justify the name *E. Kerneri*—or it might not."—**Pearsall.**

Orobanche Hederae Duby. [Ref. X.52.] On Ivy on ledges in Cheddar Gorge, N. Somerset, July 31, 1923.—J. E. **Lousley.**

Mentha alopecuroides Hull. Burgh St Margaret, Fleggburgh, Norfolk, August 25, 1926.—R. J. **Burdon.** "Yes."—**Druce.** "Correctly named. The leaves are thinner and less hairy than usual, but the plants may have been growing in shade."—**Fraser.**

Mentha longifolia Huds. Oxford, September 1926.—G. C. **Druce.** "The leaves are too short and broad for *M. longifolia* Huds., and they are netted with sunk venation on both surfaces. It may be named *M. longifolia* Huds., var. *nemorosa* (Willd.) or, as Briquet declared in 1894, × *M. niliaca* Jacq., var. *nemorosa* (Willd.)."—**Fraser.**

Mentha longifolia Huds., var. *nemorosa* Willd. [Ref. No. 2345.] Meadow by R. Stour, Nayland, W. Suffolk, September 9, 1926. I think sufficiently hairy for this var., and agreeing very well with Mr Robinson's Ref. No. 85 from Carbrooke Fen, Norfolk, 1914.—G. C. **Brown.** "Rather narrow leaves for this variety, but their shortness, and the sunk venation on both surfaces would admit the name as correct. It is more common than the true *M. longifolia* in my experience. It is difficult to draw the line sometimes between these two forms of Mint because the leaves of good *M. longifolia* may sometimes be somewhat rugose, especially when young."—**Fraser.**

Mentha nemorosa × *viridis* = *M. Nouletiana* Timbal-Lagr. Adventive on the border of a neglected cultivation, Montpelier, Belfast, Co. Antrim, August, 1926. (*Journ. Bot.* Oct. 282, 1926.) It has the slender interrupted spike, glabrous corolla and incised leaf-serration of *M. viridis* with a pubescent clothing such as a *longifolia* form might contribute. The savour of the fresh plant resembled that of Spear-Mint, but was coarser. Two large clumps had appeared within the previous two years, with Verbascums, Feverfew and Epilobia. Gardeners of long experience in the locality had never seen it elsewhere. Neither of the presumed parents is a native Irish species.—J. W. **White.** "I had not previously seen this Mint, though I read Mr White's account of it in *Journ. Bot.* I have one which I reckon has the parentage *M. longifolia* × *viridis*, but the leaves are far less hairy, the serratures are shorter and most of them are incurved at the point. The inflorescence is also less hairy. My duties in summer leave no time for research, but probably Mr White's specimen is correctly named. The slender, much interrupted spike is the chief evidence of *M. viridis*."—**Fraser.**

Mentha aquatica L. Swalcliffe Common, Oxon, July 6, 1926. This seems to me normal (perhaps rather less hairy than usual), except for a peculiar unpleasant quality of the smell. This was more marked in the fresh state than now. It is certainly not the normal scent of *aquatica*.—H. J. Riddelsdell. "Yes; *M. aquatica* L., var. *major* Sole (1798), *M. aquatica* L., var. *acuta* Briq. (1894), *M. aquatica* L., var. *acuta* H. Braun (1890). One of the two most common varieties of the species."—Fraser.

Mentha aquatica L. Blackdown, W. Sussex, August 31, 1926.—R. J. Burdon. "Yes; *M. aquatica* L., var. *major* Sole. It is what J. Briquet named *M. aquatica* L., var. *acuta* Briq. in 1894."—Fraser.

Mentha aquatica L., var. *acutifolia* (Sm.). Dovedale, Staffs, December 1926. This comes nearest to var. *acutifolia* Sm., but the scent was sweet, *gentilis*-like. It grew plentifully on both sides of the Dove in Dovedale.—G. C. Druce. "The top of the main stem of my specimen has been broken off, but six branches show that this is a verticillate mint, namely, × *M. verticillata* L., var. *ovalifolia* Briq. *M. ovalifolia* Opiz. (*M. aquatica* × *arvensis*)."—Fraser.

× *Mentha verticillata* Huds., var. [Ref. No. 2346.] Meadow, Fingrinhoe, N. Essex, August 12, 1926. A strong growing and hairy form, which seems to fit the var. *rivalis* Briquet, as described in Mr Fraser's résumé in *Rep. B.E.C.* 1924.—G. C. Brown. "All things considered, I would admit this as × *verticillata* L., var. *rivalis* Briq. The two lowest pairs of leaves in my specimen approach the variety *ovalifolia* Briq., but they are abnormal, I think. The third pair of leaves, and those on the branches, are right for var. *rivalis*. The leafy bracts accompanying the verticils of flowers, particularly the upper ones, are much alike in most cases in both of the above varieties. Mostly all segregates of × *M. verticillata* vary considerably in hairiness. Linnaeus is the older authority for × *M. verticillata* (1759); Hudson dates 1762."—Fraser.

Mentha sativa L., var. *subspicata* Becker. Bank of rhine, Walton-in-Gordano, N. Somerset, August 27, 1926. Remarkable for its long aerial stolons.—I. M. Roper. "I admit that this is a subspicate Mint, but this form or state is liable to appear in several varieties with leaves of a different form. It is what was named × *M. verticillata* L., var. *ovalifolia* Briq. in 1894. *M. ovalifolia* Opiz. (*M. aquatica* × *arvensis*). It might be placed under *M. sativa* L., but his *M. verticillata* L. is the older published name (1759)."—Fraser.

× *Mentha niliaca* Jacq. Near Abingdon, Berks, September 1926.—G. C. Druce. "Agrees pretty closely with Jacquin's description and plate in *Hort. Vind.* iii., p. 46, t. 87 (1776 and 1777). His description would seem to imply that the leaves are more villous on the upper surface than in my specimen, but his plate does not support this view. The ovate leaves on the main axis, and lanceolate ones on the branches agree with the description. Jacquin says that the stamens are exserted, but that is only very occasional in hybrid Mints. The short spikes and form of the leaves place this between the var. *mollissima* (Borckh.), and var. *sapida* (Tausch) Briq. It is the oldest described form in this series of hybrids." —**Fraser.**

Mentha villosa Huds., var. *sapida* (Tausch) Briq. (f. valde *lanigera*). By River South Esk at Netherton, Forfar, September 26, 1926. See *Rep. B.E.C.* 215, 273, 1912, and 332, 1913. This mint is not infrequent in Forfarshire, growing in quantity by roadside-ditches and covering large areas of river shingle by the South Esk and its tributaries.—R. & M. **Corstorphine.** "Correct as named by J. Briquet in *Rep. B.E.C.* 332, 1913, but in 1894 he placed *M. villosa* and other allied hybrid forms under × *M. niliaca* Jacq. The date of the latter is 1776-1777, and the date of × *M. villosa* Huds is *Fl. Angl.*, ed. 2, 250, 1778."—**Fraser.**

Calamintha Acinos Clairv. White var., very densely tufted in growth. Hackhurst Downs, Surrey, August 1926.—W. **Biddiscombe.**

Satureia adscendens Jord. = *S. Calamintha* Scheele. Abingdon, Berks, September 1893.—G. C. **Druce.**

Satureia sylvatica (Bromf.) Hort. Oxon ex Apes Down, Isle of Wight, September 1907.—G. C. **Druce.**

Marrubium vulgare L. Stony moorland, Rhyd-y-Foel, Llandulas, Denbigh, June 29, 1926.—C. **Waterfall.**

Salvia Verbenaca L., forma. Waste ground, Tilbury, Essex, June 6, 1926. Form with the corolla about twice length of calyx. The spring leaves are much more deeply cut than the autumn.—R. **Melville.**

Nepeta Cataria L. Waste ground, Tilbury, Essex, August 14, 1926. —R. **Melville.**

Stachys sylvatica × *palustris*. [Ref. No. 2342.] Cultivated field, Berechurch, N. Essex, July 11, 1926.—G. C. **Brown.** "The evidence of *sylvatica* in this is very slight, the leaves and their clothing is distinctly *palustris*, var. *canescens* Lange. In × *S. ambigua* the leaves are stalked —these are sessile—as is shown in Mr Riddelsdell's specimens of *S. ambigua* from Bloxham."—**Druce.**

Stachys ambigua Sm. = *palustris* × *sylvatica*. In quantity in two localities (1) between Bloxham and Banbury, nearer the former; (2) beyond Banbury, on the Warwick Road, August and September 1926.—H. J. **Riddelsdell.**

Galeopsis angustifolia Ehrh., var. *canescens* Schultz. [Ref. X.100.] Field near Headley, Surrey, October 3, 1926.—J. E. **Lousley.** "Many

English botanists would so name it but, if Rouy (*Fl. Fr.* xi., 281) be correct, we have been wrongly interpreting Schultes' plant. Rouy, in his key says of *canescens*—'Plante recouverte d'un indument feutré-blanchâtre, calices compris; feuilles étroites, souvent pliées, calice non muni de poils étalés et de glandes," whereas in these specimens there are many glandular spreading hairs. Billot's specimen, No. 1300, cited by Rouy, has appressed hairs almost destitute of glands. According to his key, Mr Lousley's specimens would come under var. *calcarea* Schönheit = *monticola* Lannes. Briquet (*Mon. Galeopsis* 284, 1893), however, says of *canescens*—' Calices ± glandulosi vel subglandulosi.' The forms of *G. Ladanum* are well worth working out as we have many which have been ill-defined in Britain. These specimens do not agree with Billot's specimen of *canescens*."—DRUCE.

Galeopsis Tetrahit L., var. *nigricans* Bréb. [Ref. No. 2933.] Ranmore, Surrey, August 15, 1926.—C. E. BRITTON. "Yes; presumably the white-flowered form."—DRUCE.

Lamium hybridum Vill., var. *decipiens* Rouy. [Ref. Nos. 2853 and 2867.] Blue House Crossing, Malden, Surrey, March 28, 1926, and May 9, 1926.—C. E. BRITTON. "The placing of this under *L. hybridum* by Rouy does not commend itself to me. The habit of the plant, length of the corolla in relation to the calyx, and the ring of hairs within the corolla all point to a variety of *L. purpureum* under which it is best placed as var. *decipiens* Sonder."—WADE. "Passed as correctly named by A. THELLUNG."—DRUCE.

Lamium purpureum L., var. *Lumbii* Dr. Hort. Oxon, ex seed from Dalton in Furness, August 1926. Distinguished by its small size and consistently small leaves. It was originally sent me by Mr D. Lumb from Dalton in Furness, and has reproduced itself in my garden for several years.—G. C. DRUCE.

Teucrium Chamaedrys L. Cultivated from plant from Wootton under Edge, Gloster.—W. BIDDISCOMBE.

Plantago Coronopus L., var. *ceratophyllon* Hoffmg. & Link. Coast of Caithness near Keiss, September 1924.—G. LITTLE; comm. A. BENNETT.

Herniaria ciliata Bab. Lizard, E. Cornwall, September 1912.—G. C. DRUCE.

Chenopodium rubrum L., forma. Port Meadow, Oxon, September 1926.—G. C. DRUCE.

Chenopodium glaucum L. Burton-on-Trent, Staffs, September 1926. Abundant on the sidings. A new county record, only here, of course, adventive, if indeed it has any other grade in Britain.—G. C. DRUCE.

Atriplex hortensis L. [Ref. No. 2385.] Waste ground, Finchley, Middlesex, September 5, 1926.—J. E. **Cooper**; comm. G. C. **Brown**. "Yes."—**Druce**.

Atriplex ——. [Ref. No. 2355.] Waste ground, by maltings, Hythe Quay, Colchester, N. Essex, August 22, 1926. This has appeared for several years in small quantity. Hitherto I have been unable to get a name for it. The meal has a yellowish-white tinge.—G. C. **Brown**. "A form of *A. tatarica* L."—**Druce**.

Atriplex Portulacoides L. Muddy salt marshes, Southport, Lancs, September 22, 1926.—R. **Bright**.

Salicornia ramosissima Woods.? [Ref. No. 2351.] Cart-track at Stone Point, Walton-on-Naze, N. Essex, August 29, 1926. In an old cart track never touched by the tide, the branches are hence rather more slender than usual, but otherwise, I think, characteristic. Not reddening. In great abundance.—G. C. **Brown**. "I believe correct, but gathered too early; it is scarcely in flower."—**Salmon**.

Suaeda fruticosa Forsk. Stiffkey, Norfolk, July 24, 1926.—R. J. **Burdon**.

Polygonum ——. [DD. 991.] Yarnton, Oxon, September 1926.—G. C. **Druce**. "Mr W. R. Sherrin, curator of the South London Botanical Institute, and I have made a careful examination of this, and are of opinion that it is *P. mite* (*P. laxiflorum* Weihe)."—**Britton**.

Polygonum ——. [DD. 992.] Yarnton, Oxon, September 1926.—G. C. **Druce**.

Polygonum Hydropiper L., var. *densiflorum* A. Br. [Ref. No. 2988.] Brox, Surrey, October 2, 1926. Very unlike *P. Hydropiper* when growing, but possessing the essential characters of this species. A note referring appears in *Journ. Bot.* 328, 1926.—C. E. **Britton**.

Polygonum Bistorta L. Field at Pyrford, Surrey, July 1926.—W. **Biddiscombe**.

Polygonum ——. [Ref. No. 2268.] Waste ground, Hythe Quay, Colchester, September 7, 1926. See *Rep. B.E.C.* 1062, 1925.—G. C. **Brown**. "This is *P. cognatum* Meisn., var. *alpestre* (C. A. Mey), teste A. **Thellung**.—**Druce**.

× *Rumex Mureti* Hausskn. (*R. glomeratus* × *pulcher*). [Ref. No. 2920.] Littleworth Common, Surrey, August 8, 1926.—C. E. **Britton**. "Yes; I think so, but *conglomeratus*, not *glomeratus*, is one of its parents with *pulcher*. In the *Camb. Fl. glomeratus* was given in error as it is antedated by Murray's name."—**Druce**.

Rumex limosus Thuill. Bank of Chard Reservoir, S. Somerset, July 5, 1926.—H. Downes. "This is *R. palustris* Sm. *R. limosus* Thuill. is said to be a hybrid of *maritimus* and *conglomeratus*."—Druce.

Rumex Patientia L. Waste ground, Redland, Bristol, W. Gloster, 1926. A well established alien.—I. M. Roper. "Yes; a handsome species, a native of Eastern Europe, of rare adventive occurrence."—Druce.

Euphorbia virgata W. & K. Near Henley, Oxon, July 1926.—G. C. Druce.

Euphorbia Esula L. On a bank of the Tweed near Melrose, Roxburgh, July 1926.—I. M. Hayward.

Euphorbia ——. [Ref. No. 4.] Sandy field, Victoria Road, Prestatyn, Flint, August 28, 1926.—C. Waterfall. "Is *E. Cyparissias* L." —Druce.

Euphorbia exigua L. Roadsides, near Prestatyn, Flint, August 28, 1926.—C. Waterfall.

Mercurialis perennis L., f. *monoica*. Tidebrook, E. Sussex, May 1, 1926. All the specimens from this gathering have the lower spikes wholly male, and the upper wholly female or female towards their ends. In previous gatherings from other localities the sexes have been more indiscriminately mixed or with a tendency to grow female flowers on the lower spikes or the lower portions of them. In one piece I dug up (not in this locality), a wholly male flowering stem was growing clearly on the same rhizome as a wholly female one. This came from the same cluster as the monoecious form.—A. H. Wolley-Dod.

Ulmus sp. Bloxham, Oxon, June 10, 1926. Is this *Plotii*?—H. J. Riddelsdell. "More likely to be a form of *U. nitens* Moench than of *U. Ploti*, the best name for which I think is *U. minor* Reichenbach, but more mature foliage needed."—Jackson.

Parietaria ramiflora Moench. Clinging to rocks at the Quarries, Bryn Euryn, Colwyn Bay, Denbigh, June 25, 1926.—C. Waterfall.

Salix triandra × *viminalis*, b. *Trevirani* Sprengel. [Ref. No. 452.] Near Mortlake, Surrey. The catkins are rather short lived, and much gathered by the public on account of the silky hairs upon them when only partly grown. The leaves were gathered early to show how different the short stipules are from those of *S. rubra* Huds. and those of *S. undulata* Ehrhart.—J. Fraser.

Salix alba L., var. Riverside between Grimston and Maiden Newton, Dorset, August 31, 1926.—J. W. White. "This comes very close to N. J. Andersson's *S. alba* L., var. *angustata*. His description is

'Leaves 4-6 times longer than broad, very longly cuspidate at the apex, for the most part obsoletely serrulate, and silky on both sides.' The leaves are scarcely obsoletely serrulate otherwise the specimens agree. *S. alba* varies considerably in the width of the leaves in Surrey, and this can be detected in the second year of seedlings."—FRASER.

Salix alba L., var. *vitellina* (L.) ♀. By stream, Lambriggan, Perranzabuloe, W. Cornwall, catkins May 24, 1926, leaves August 1926. Taken, I believe, from the tree recorded as var. *vitellina* in Davey's Flora of Cornwall, p. 413.—F. RILSTONE. "I can only make this to be *S. alba* L. and, if I were to give it a varietal name, it would be *S. alba* L., var. *angustata* Anderss. The leaves are more nearly obsoletely serrulate than specimens sent in by Mr J. W. White. The var. *vitellina* (L.) should have the bracteoles or scales of the catkins as long as the mature ovaries; but here they are much shorter than them at the stage of pollination. The small size of the leaves and catkins is highly interesting."—FRASER.

Salix alba × *fragilis* (*viridis* Fries). ♂. [Ref. No. 252.] Spa Bottom, Esher, Surrey, April 12 and July 4, 1926. The ♂ of this hybrid is much scarcer than the ♀ which is fairly frequent and widely distributed The ♂ has fewer distinctive marks than the ♀, but the serratures are intermediate between the parents and far more regular than in *S. fragilis*.—J. FRASER.

Salix alba × *triandra* (*undulata* Ehrh.). [Ref. No. 582.] Fieldcommon Farm, West Molesey, Surrey, April 2 and July 4, 1926. The specimens were cut from a tall old bush, growing by the side of a ditch in clay soil, to show how small the leaves of *S. undulata* Ehrh. may be under the circumstances. The flowering twigs are very short and unfortunately cut a few days too soon, but have all the characters of the bushes on the banks of the Thames.—J. FRASER.

Salix viminalis L. Near East Haven Station, Forfar, May 3, and October 23, 1912. "An extremely broad-leaved form." Det. E. F. LINTON. —R. & M. CORSTORPHINE. "This is *S. caprea* × *viminalis* (*mollissima* Sm.). *S. viminalis* gives no varieties of any importance. The underside of the leaves of this specimen is not silky and sleek as in *S. viminalis*, the hairs being curled and confused. The lower leaves are also more or less crenate. It is what N. J. Andersson called *S. sericans* Tausch, forma or modification *subobscura*, on account of the crenatures of the leaves. This narrow-leaved form of *S. caprea* × *viminalis* is plentiful about Killin, Mid Perth, or was so at the beginning of this century."—FRASER.

Salix aurita × *cinerea*. [Ref. No. 2352.] Middlewick Rifle Ranges, E. Denyland, N. Essex, March 14 and August 15, 1926.—G. C. BROWN. "I would call this simply *S. cinerea* L. The leaves are very thinly pubescent with short, very red hairs. The styles are also rather long for the hybrid. The catkins are slender, but *S. cinerea* can vary much in this respect."—**Fraser.**

Salix aurita × *cinerea*. [Ref. No. 2353.] Middlewick Rifle Ranges, East Denyland, N. Essex, March 14 and August 15, 1926.—G. C. **Brown.** "I would call this *S. cinerea* L. The leaves are subglabrous, some of them having only a few specks of red hairs. I like to see a considerable amount of pubescence on the underside of the leaves of the hybrid to show the presence of *S. aurita*."—**Fraser.**

Salix aurita × *cinerea* (= *S. lutescens* A. Kern.). Putney Heath, near Oxted Chalk-pit, N. of Woking town, Holmwood Common, Epsom Common and Ockham Common, all in Surrey, August and September 1924 and March and April 1925.—J. **Fraser**; comm. G. C. **Druce.**

Salix cinerea L., forma. [Ref. No. 2354.] Middlewick Rifle Ranges, East Denyland, N. Essex, March 14 and August 15, 1926. With Ref. Nos. 2352 and 2353 and true *S. aurita*. The leaves are unusually narrow, but I believe there is no suspicion of hybridity, and *oleifolia* is ruled out by the strong serratures.—G. C. **Brown.** "I agree to this. *S. cinerea* is one of the most variable of British Willows and gave me more trouble than any other species to grasp the limits of it when I was commencing the study of the genus nearly thirty years ago."—**Fraser.**

Salix cinerea × *viminalis* ♂. [510.] Near Sootfield Green, Herts, April 21, 1925, and September 13, 1926. Det. E. F. **Linton.** For notes, see *W.E.C. Rep.* 182, 1921.—J. E. **Little.**

Salix Myrsinites L., forma *procumbens* (Forbes). ♀. [Ref. Nos. 3482, 3481 and 3280.] Rocky freestone crags at ravine side, west side of Glen of Gair, north side of Ward Hill, Hoy, Orkney, August 4, 1926. Very rare. Two female plants, in undeveloped fruit, only seen. The plant, from which these specimens were collected, was in full flower on May 13, 1926.—H. H. **Johnston.** "Yes; the leaves are large for *S. Myrsinites* though the catkin does not equal that of Forbes Sal. Wob., t. 61. The catkin comes within the description, however. To be in full flower on 13th May, the bush must have been growing under the mild conditions of Gulf Stream waters. I have male specimens from the Highlands with the catkins only one-third developed on June 3."—**Fraser.**

Ceratophyllum submersum L. Pond by River Yeo, Congresbury, N. Somerset, September 10, 1926. Shows good and distinctive fruit. Mr H. S. Thompson first called my attention to the plant.—I. M. **Roper.**

Spiranthes spiralis Koch. (*S. autumnalis* Rich.). Lawn at Brookfield, Bovey Tracey, S. Devon, September 22, 1926. —C. **Waterfall.**

Goodyera repens Br. Strachan, Kincardine, July 1926.—G. C. **Druce.**

Helleborine palustris Schrank, var. *ericetorum* (A. & G.). Birkdale, Lancashire, July 1876.—G. C. **Druce.**

Orchis purpurea Huds. [Ref. X.99.] Copse near Lydden, E. Kent, May 17, 1926. When I saw this colony in 1925 there were about 150 plants.—J. E. **Lousley.**

Orchis laxiflora Lam. Damp meadows, St Ouen's Bay, Jersey, May 18, 1926.—L. **Arsene.**

Romulea Columnae Seb. & Maur. Hillsides, sandy commons, Le Ouaine, Jersey, March 3, 1926.—L. **Arsene.**

Allium sphaerocephalum L. Sands near the sea, St Aubin's Bay, Jersey, June 10, 1926.—L. **Arsene.**

Gagea lutea (L.) Ker-Gawl. Near Collingtree, Northants, March 1926.—G. C. **Druce.**

Juncus compressus Jacq. Horn Moor, near Chard, S. Somerset, July 13, 1926.—H. **Downes.**

Juncus acutus L. [Ref. X.45.] Sandhills near Deal, E. Kent, June 1925.—J. E. **Lousley.**

Luzula Forsteri DC. × *pilosa* Will. (*L. Borreri* Bromf.). Knowle, Mayfield, E. Sussex, May 16, 1926. I can see no obvious distinction between these specimens and normal *L. pilosa*, except that these are all barren or very nearly so. The two species were growing together in plenty, but I did not find any plants that were only partially barren, so assumed they were all the hybrid.—A. H. **Wolley-Dod.**

Sparganium simplex Huds. Burgh Common, Norfolk, July 28, 1926. —R. J. **Burdon.**

Sparganium affine Schnitz. Burgh Common, Fleggburgh, Norfolk, July 22, 1926.—R. J. **Burdon.** "The older name is *S. angustifolium* Michaux."—**Druce.**

Alisma lanceolatum (With.). ? Ditch, Berrington, Salop, July 31, 1926.—A. **Wilkinson.** "The leaves are too broad at the base for var. *lanceolatum* (With.). It is only a small form of the type."—**Druce.** "*A. Plantago-aquatica*, the leaves are not narrowed at the base."—I. M. **Roper.** "Surely *A. Plantago.*"—**Little.**

Butomus umbellatus L. Between Ripley and Walsham, August 1926. —W. **Biddiscombe.**

Potamogeton heterophyllus Schreb. Ainsdale Lake, S. Lancs, July 14, 1924.—J. A. **Wheldon**; comm. **National Museum of Wales.** "Correct."—BENNETT. "My sheet exhibits a form of *P. nitens*. The submerged branch-leaves are ± rounded at the base—not tapered and lanceolate, as in *P. heterophyllus*. The tendency of most Potamogeton species to fold the basal margins of their leaves in drying is often very misleading, as in this case."—PEARSALL.

Potamogeton pensylvanicus Cham. & Sch. Canal near Elland, S.W. Yorks, August 4, 1926.—W. A. SLEDGE. "Britton and Brown in their *Illustrated Flora of the Northern States and Canada*, 2nd ed., 1913, p. 77, give a plate of this *Potamogeton* under *P. epihydrus* Raf."—WALL. "For this species see *Rep. B.E.C.* 787, 1925, also the Report for 1926. where notes are given on it."—BENNETT. "Excellent examples of this interesting N. American species. Gray's 'New Man. of Botany,' ed. 7, 72, 1908, gives this as *P. epihydrus* Raf., citing as synonyms *P. pensylvanicus* Willd. and *P. Nuttallii* C. & S. Dr Hagström (*Crit. Researches*, 139) rejects Rafinesque's name on the ground that his original description of the submerged leaves—'foliis . . . submersis subcordatis,'—does not apply to the plant now before us. He, therefore, uses the name *P. Nuttallii* Cham. & Schlecht., thus agreeing with Dr Morong in Naid. N. Amer., tab. 29, 2 (1893)."—PEARSALL.

Potamogeton nitens Web., forma *involuta* Fryer. [Ref. No. 3004.] Blackbush Drain, Whittlesea, Cambridge. District 8, June 25, 1895, Herb. A. Fryer, from CHAS. BAILEY; comm. G. C. DRUCE. See *Journ. Bot.* 1896, p. 1, tab. 353-4. "Hagström in his *Crit. Researches on Potamogeton* places this as under var. *subgramineus* (Raunkier) Hagst., f. *involutus* Fryer."—BENNETT.

Potamogeton Friesii Rupr. Burgh St Margaret, Norfolk, August 3, 1926.—R. J. BURDON. "An unrecorded station for E. Norfolk."—BENNETT. "Yes; *P. Friesii* Rupr."—PEARSALL.

Scirpus fluitans L. Burgh St Margaret, Norfolk, August 17, 1926. —R. J. BURDON.

Scirpus americanus Pers. Edges of ponds, St Ouen's Bay, Jersey, July 15, 1926.—L. ARSENE.

Eriophorum angustifolium Roch., var. *brevisetum* Druce. See *Rep. B.E.C.* 789, 1925. Marsh at Petit Port, where the type was absent, July 10, 1926. The specimens of the type, distributed with the variety, were collected at Canal du Souez, July 15, 1926.—L. ARSENE. "Yes; good examples."—DRUCE. "I do not know Dr Druce's plant, but I should suppose it correctly named."—BENNETT.

Cladium Mariscus Br. Burgh St Margaret, Norfolk, July 27, 1926. —R. J. BURDON.

Carex divisa Huds., var. —. Richmond Park, Surrey, July 1926. Discovered by Mr J. Fraser in Richmond Park, Surrey. With his direction I found it there. It is a narrow-leaved form, which was thought to be *chaetophylla*. Rouy (*Fl. Fr.* xiii., 495) treats the latter as a distinct species = *C. ammophila* Willd. = *setifolia* Godr. = *chaetophylla* Husnot, but the Richmond plant differs from the description given by Rouy in its fruits and glumes. It may come under the var. *rivularis* Kük., but it grew in dry places in Richmond Park. Whether native or no I feel unable to say, but it was restricted to a few largish patches.—G. C. DRUCE. "These specimens seem to answer fairly well to the *C. setifolia* Godr. in Fl. Mont., G. et G. Fl. France 3, p. 390, 1855 = *C. chaetophylla* Steud. (1855). There is another *C. setifolia* Kunze (1840) (Chili) and another *C. setifolia* Dewey (U.S.A.)."—BENNETT.

Carex remota L. [Ref. X.29.] Laneside by King's Mills, Guernsey, June 15, 1926. I am sending this because *C. remota* is very local in Guernsey.—J. E. LOUSLEY. "Yes; approaching the var. *subloliacea* A. & G."—DRUCE. "Very exiguous material."—LITTLE.

Carex elongata L. Near Sandford Mill, Berks, June 1926.—G. C. DRUCE.

Carex helvola Blytt = *C. canescens* (Lightf.) × *lagopina* Wahl. (= × *Lachenalii* Schkuhr). Lochnagar, S. Aberdeen, 3500 ft., August 1925.—A. H. EVANS; comm. A. BENNETT; teste KUKENTHAL.

Carex Hudsonii Ar. Benn. Fruits. Wretton Fen, W. Norfolk, June 7, 1926.—J. E. LITTLE.

Carex gracilis Curt. Near Woodcote, Oxon, August 1926.—G. C. DRUCE.

Carex ornithopoda Willd. Origin: Hutton Roof Crag, Westmorland, September 1921; cult. in garden at Ro Wen, April 27, 1926. Hutton Roof Crag (Carboniferous "Great Scar" Limestone) is a new locality for this plant. It is near the boundary of West Lancashire, in which vice-county it may perhaps yet be discovered.—A. WILSON.

Carex lepidocarpa Tausch. [695.] Sterile. Wretton Fen, W. Norfolk, June 7, 1926. These sterile plants are possibly a hybrid. The fertile *C. lepidocarpa* was abundant, and *C. Oederi*, var. *oedocarpa* formed an important part of the sward, upon peat, in the valley of the Wisley. I saw no *C. fulva* Host here, but it occurs within 10 miles.—J. E. LITTLE.

Carex Oederi Retz. aggr. [650.] Wretton Fen, W. Norfolk. Lower spikelet remote, ♂ spikelet stalked or not. August 10, 1925. These appear to be intermediate between *C. Oederi* and var. *oedocarpa*.—J. E. LITTLE. "Yes; near the var. *elatior* And."—DRUCE.

Carex Grahami Boott. Glen Fiagh, Forfar, July 1926.—G. C. DRUCE.

Panicum sanguinale L. Sandy fields and roadsides, Waterworks Valley, Jersey, September 1, 1926.—L. Arsene.

Panicum capillare L. Waste ground, Dagenham, Essex, August 27, 1926.—R. Melville.

Phalaris canariensis L. Waste ground, Splott, Cardiff, Glamorgan, June 23, 1926.—A. E. Wade; comm. National Museum of Wales.

Phalaris paradoxa L. Waste ground, Splott, Cardiff, Glamorgan, June 23, 1926.—A. E. Wade; comm. National Museum of Wales.

Alopecurus geniculatus L. [Ref. No. 2343.] Saltmarsh form. Marsh by River Colne, Wivenhoe, N. Essex, June 26, 1926. This bulbous form is confined to the non-tidal ditches of the saltmarshes in most parts of the Essex coast. Undoubtedly there is a trace of brackishness in the water in all its habitats, though frequently found in typically fresh-marsh plant associations. In these specimens the " bulb " is very well shown. Apparently it has not received a varietal name.—G. C. Brown. " This is *A. bulbosus* Gouan."—Howarth.

Mibora minima Beauv. Sand dunes and dry hillsides, The Quenvais, Jersey, March 16, 1926.—L. Arsene.

Apera Spica-venti Beauv. Corn field between Burnham and Burnham Beeches, Bucks, July 24, 1926.—I. A. Williams. " This is the var. or sub-var. *purpurea* (Gaud.) Rouy."—Druce.

Corynephorus canescens Beauv. Sand dunes, The Quenvais, Jersey, July 15, 1926.—L. Arsene.

Sesleria caerulea Ard. Langstrothdale, Upper Wharfedale, M.W. Yorks, May 16, 1915.—E. C. Horrell; comm. W. A. Sledge. " Nice specimens of the typical plant."—Bennett.

Cynosurus echinatus L. [Ref. X.27.] Waste ground now enclosed in the garden of Mrs M. A. McCrea at Leree, Guernsey, June 15, 1926. It seems that it has been known in this locality for some years, but is now very rare in Guernsey.—J. E. Lousley. Also from dunes of St Ouen's Bay, Jersey, June 5, 1926.—L. Arsene. Also from Wymondley Road, Hitchin, Herts, June 21, 1926, casual.—J. E. Little.

Koeleria gracilis Pers., var. *britannica* Domin. Harston, Leicester, July 18, 1916.—A. R. Horwood; comm. National Museum of Wales.

Koeleria albescens DC. Sand dunes and dry hillsides, The Quenvais, Jersey, June 15, 1926.—L. Arsene. " Judging by remarks made many years ago when my friend, M. J. Nicholson of Kew, had specimens sent him by de Candolle (which he returned), these specimens are correct."—Bennett. Also from St Ouen's Bay, Jersey, June 20, 1926.—J. E. Lousley.

Briza maxima L. Dry banks, doubtfully native, Pont Marquet, Jersey, June 5, 1926.—L. Arsene.

Eragrostis major Host. Grain alien, Splott, Cardiff, Glamorgan, September 9, 1926. Syn. *E. megastachya* Link, *Briza Eragrostis* L. All the plants were growing together on a neglected allotment. Hence their size.—R. L. Smith. "This should read *E. megastachya* Link."—Howarth. "Dr Thellung names it *E. major* Host. *E. cilianensis* Vig.-Lut. is said to be the older name, but *E. Eragrostis* (L.) Dr. avoids this conflict of names."—Druce.

Poa nemoralis L. Dry shrubby meadow, Provinc. Östergotland, Sweden, August 3, 1919.—S. Lindman.

Poa ——. High Force, Teesdale, Durham, June 1925.—G. C. Druce. "This is *Poa nemoralis* L."—Howarth.

Poa compressa L. Dry roadside, Provinc. Östergotland, August 18, 1919.—S. Lindman.

Poa angustifolia L., type. Woodyhill, Og. Krokek, Sweden, August 1919.—S. Lindman.

Poa angustifolia L., f. *setacea* Döll. Very dry meadow, Provinc. Östergotland, Sweden, August 1919.—S. Lindman.

Poa angustifolia L., f. *decipiens* (Lindm.). Meadow in a garden, Provinc. Östergotland, Sweden, August 11, 1919.—S. Lindman.

Poa trivialis L. Rather dry soil, Provinc. Östergotland, Sweden, August 17, 1919.—S. Lindman.

Festuca dumetorum L., sensu Hackel. Skegness, N. Lincoln, July 1906. Named as *Festuca dumetorum* for me by Prof. Hackel. The description in the "Species Plantarum" 108, 1763, is "Panicula spiciforme pubescente foliis filiformibus; culmi pedales f. sesquipedales, filiformes, teretes geniculis duobus tumidis. Folia radicalia pedalia, teretia, vix ancipitia; caulina breviora, canaliculata. Panicula parva, quasi spicata. Spiculae 10 f. 12 oblongae, pubescentes, canescentes; inferiores geminae, pedicellatae; superiores sessiles, solitariae. Glumae terminatae arista minuta. Figura –Moris. Hist. 3 f. 8 t. 2 f. ult. hanc refert. Bulbi saepe prognascuntur intra vaginas culmi. Affinis valde *F. duriusculae*." See also *Rep. B.E.C.* 141-2, 1911; 174, 1914; 135, 1917, and 491, 1924. Rouy (*Fl. Fr.* xiv., 202) gives *F. dumetorum* with *F. arenaria* Osb. as a race.—G. C. Druce. "This is not as named; the specimen sent to me has not even got the typical hairy glumes of either *F. dume-*

torum or of *F. rubra*, var. *arenaria* Osb. Notwithstanding, I should place it under the latter as forma *glabra*."—Howarth.

Festuca ligustica Danth. Grain alien, Splott, Cardiff, Glamorgan, July 3, 1926. This plant appeared in dozens on most of the neglected allotments. In fact the chief vegetation of these patches consisted of it, in company with *Hordeum Gussoneanum* Parl. and *H. jubatum* L., all three being equally abundant.—R. L. Smith. "This is *F. geniculata* Willd."—Howarth. "Thellung names it *F. geniculata* (L.) Willd., var. *ciliata* (Parl.) A. & G."—Druce.

Bromus maximus Desf. Sandy places and dry banks, St Ouen's Bay, Jersey, June 5, 1926.—L. Arsene.

Triticum ventricosum Ces.? (*Aegilops ventricosus* Tausch). [Ref. No. 2350.] Waste ground, by maltings, Hythe Quay, Colchester, N. Essex, June 11 and 13, 1926. If correct, and it seems to agree perfectly with Archangelis's description in "Flora Italiana," this has not, I believe, been previously recorded for Britain.—G. C. Brown. "Yes; the plant is also described by Ascherson and Graebner in Syn. Mittel-Eur. Flora ii., 1, p. 711."—Howarth. "Yes."—Thellung.

Lepturus incurvus L. [Ref. No. 2344.] On chalk refuse, Langenhoe, N. Essex, June 27, 1926. First seen on an excursion of the S.E. Union of Scientific Societies under the leadership of Dr E. J. Salisbury, who agrees with this identification. The plants are confined to the spots covered by old chalk heaps unloaded here from barges. *L. filiformis* occurs in the same spot on unaltered soil.—G. C. Brown. "This is the name given in Druce's *List*, but I venture to suggest *L. incurvatus* Trin. as correct." -Howarth. "Yes; but the name should stand is *L. incurvus* (L.) Druce. Thellung places it in the genus *Psoliurus*. *Incurvus* retains the oldest trivial. Passed as correct by A. Thellung."—Druce.

Hordeum Gussoneanum Parl. Grain alien, Splott, Cardiff, Glamorgan, June 16, 1926. First record for Britain. This plant was at first though to be *H. maritimum* With., to which it is similar in aspect. —R. L. Smith. "Passed as correct by A. Thellung."—Druce.

Athyrium Filix-foemina Roth. var. Wolford Heath, Warwick, August 3, 1926.—H. J. Riddelsdell.

The following American species were kindly contributed by Prof. Beattie, chiefly from Massachusetts:- *Hudsonia tomentosa* Nutt., *Polygala sanguinea* L., *Arenaria groenlandica* (Retz.) Spreng., *Tilia americana* L., *Sarothra gentianoides* L., *Impatiens biflora* Walt., *Ceanothus americanus* L., *Nemopanthus* *mucronata* (L.) Trel., *Lespedeza frutescens* (L.) Britt., *Lespedeza virginica* (L.) Britt., *Lespedeza hirta* (L.) Britt., *Lespedeza capitata* Michx., *Lupinus perennis* L., *Tephrosia virginiana* (L.) Pers., *Desmodium canadense* (L.) DC., *Cassia Chamaecrista* L., *Prunus pennsylvanica* L.f., *Potentilla canadense* L., *Potentilla tridentata* Ait., *Spiraea latifolia* (Ait.) Borkh., *Spiraea tomentosa* L., *Rubus odoratus* L., *Sieversia Peckii* (Pursh) Rydb., *Dalibarda repens* L., *Decodon verticillatus* (L.) Ell., *Aralia hispida* Vent., *Cornus canadensis* L., *Viburnum acerifolium* L., *Diervilla Lonicera* Mill., *Cephalanthus occidentalis* L., *Mitchella repens* L., *Helianthus divaricatus* L., *Coreopsis rosea* Nutt., *Helenium nudiflorum* Nutt., *Sertocarpus asteroides* (L.) B.S.P., *Eupatorium purpureum* L., *Liatris squamosa* Willd., *Hieracium venosum* L., *Hieracium venosum* L., var. *rubricaulescens* F. v. E., *Doellingeria umbellata* (Mill.) Nees, *Lobelia cardinalis* L., *Campanula aparinoides* Pursh, *Kalmia angustifolia* L., *Lyonia lingustrina* DC., *Azalea viscosa* L., *Phyllodoce caerulea* (L.) Bab., *Ledum groenlandicum* Oeder. *Oxycoccus macrocarpus* (Ait.) Pursh, *Monotropa uniflora* L., *Apocynum album* Greene, *Convolvulus sepium* L., var. *americanus* Sims, *Dasystoma Pedicularia* (L.) Benth., *Mimulus ringens* L., *Scorphularia leporella* Bickn., *Melampyrum lineare* Lam., *Linaria canadensis* (L.) Dum., *Trichostema dichotoma* L., *Verbena hastata* L., *Lysimachia quadrifolia* L., *Lysimachia terrestris* (L.) B.S.P., *Naumbergia thyrsiflora* (L.) Duby, *Steironema ciliatum* (L.) Raf., *Asclepias pulchra* Ehrh., *Plantago decipiens* Barneoud, *Comandra umbellata* (L.) Nutt., *Ulmus americana* L., *Celtis occidentalis* L., *Comptonia peregrina* (L.) Coulter, *Hypoxis hirsuta* (L.) Coville, *Maianthemum canadense* Desf., *Medeola virginiana* L., *Sparganium eurycarpum* Engelm., *Osmunda cinnamomea* L.

CORRECTIONS.

Report 1925.

p. 758. Line 26. For " *Silene* " read " *Stellaria*."
p. 767. Line 21. For " 1893 " read " 1923."
Line 24. For " fruits " read " stalks."
p. 775. Line 1. For " *Somnerfeltii* " read " *Sommerfeltii*."
p. 849. Line 26. For " November 1 " read " November 29."
p. 886. Line 19. For "Miss TACKER" read " Miss GRACE TUCKER."
p. 996. Line 4. For " Monmouth " read " Isle of Wight."

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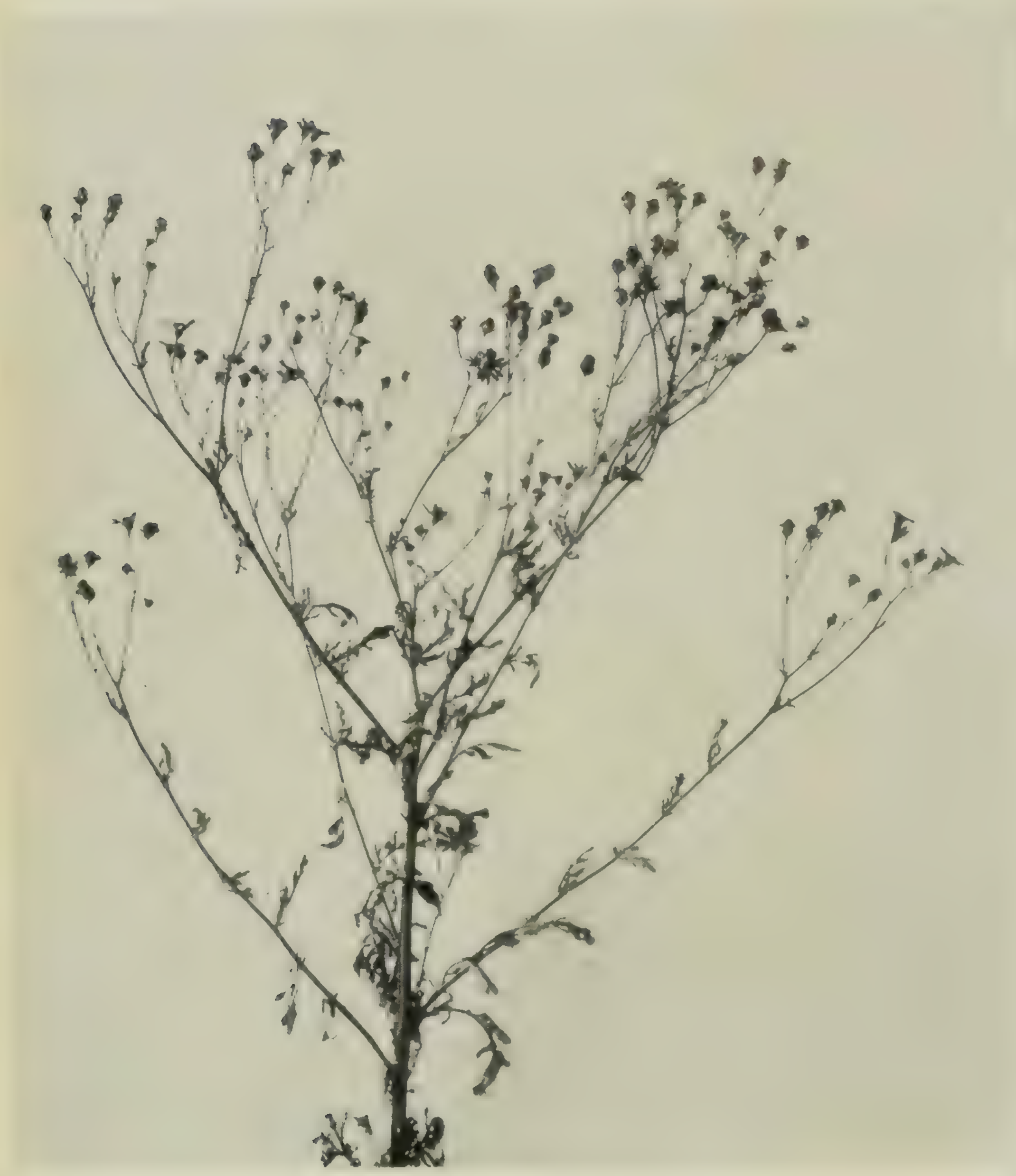

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB

more or less uniform or to take handfuls of plants. The gatherings were examined with a pocket lens, as it was found to be impossible to distinguish the two forms in the field at a glance. The results were then tabulated and it was found that *S. sativa* was the dominant or characteristic form in the district. On light or medium loamy soils, slightly acid in reaction, both were often abundant and nearly equally distributed, but on peaty or on medium to heavy soils *S. sativa* predominated, while on very heavy land the plant was almost absent.—DORIS POWELL.

VARIATION OF THE BELGIAN SPECIES OF *OPHRYS*.—J. Houzeau de Lehaie (Bull. Soc. Roy. Bot. Belg. lx. 1928, pp. 99–100) records his observations on plants which have been in cultivation since 1925 and states that:—

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(4) In *O. fuciflora* Reichb. several groups of individuals have been delimited according to the shape of the labellum alone. These groups have each a cycle of variations which have remained distinct from those of other groups for three years. The author then gives the characters of the labellum in these groups.

(5) The perianth is differently coloured, in certain cases forming distinct races.

(6) The lateral petals also vary in shape.

(7) Certain characteristics seem to be annual. Examples are given.—E. G. B.

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ABSTRACTS OF PAPERS OF INTEREST TO STUDENTS OF THE BRITISH FLORA.

Botanical Society and Exchange Club of the British Isles. Report for 1927 vol. viii. pts. 3 & 4. August 1928.—Part I., edited by Dr. G. C. Druce, contains many interesting notes and valuable papers upon British botany. Among the "Plant Notes, etc., for 1927" we notice *Cardamine impatiens* L. var. nov. *poteriifolia* Dr. (p. 301), *Alchemilla crinita* Bus. var. *britannica* Jaquet & Druce (p. 305), *Solidago Virgaurea* varr. nov. (vel formæ) *interrupta* and *dentatifolia* Dr. (p. 307), *Statice pubescens* Sm. var. nov. *Weyeri* Dr. (p. 309), *Scrophularia nodosa* L. var. *trachelioides* Dr. & Wade (p. 313), *Mentha spicata* var. *ciliata* Dr. (p. 315), *Chenopodium rubrum* L. var. nov. *kochiiforme* Murr. (p. 316), *Orchis purpurea* Huds. var. nov. *pseudo-militaris* Dr. (p. 317), and *Glyceria procumbens* Dum. var. nov. *erecta* Dr. (p. 322).

Notes on Publications, new Books, etc., occupy pp. 325–374 and Obituaries 375–383.

Among New County and other records (pp. 384–425) we find *Senecio erraticus* Bertol. (with plate), *Myosotis brevifolia* from N.W. Yorkshire, and *Stachys alpina* from Denbigh.

Lists of Plants from Co. Donegal (F. R. Browning), an account of the Flora of St. Kilda (W. B. Turrill), and an Alien Flora of the Metropolitan area (R. Melville & R. L. Smith) are given, and Dr. Druce contributes a long and interesting account of the British Plants in the Du Bois Herbarium at Oxford and another upon a visit to the Canary Islands.

There are also included articles by the Rev. T. Stephenson (Orchids), W. Watson (*Rubi*), K. Rönniger (*Thymus*), F. Jaquet (*Alchemilla*), and C. E. Britton (*Veronica*) and many others of much interest to those working at critical genera.

Part. IV. by the Distributor, Mr. F. Rilstone, contains notes upon the 4485 plants contributed by 28 members. These notes are, of course, mainly of value to members, but of general interest are those upon *Viola epipsila* (p. 565), *Galeopsis Tetrahit* (p. 584), *Polygonum maculatum* (p. 586), and *Carex leporina* var. *bracteata* (p. 590).—C. E. S.

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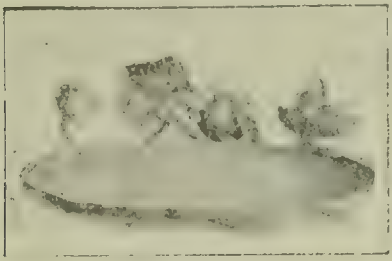

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THE REPORT OF THE SECRETARY & TREASURER,

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The year 1927, so far as the Southern and Midland areas were concerned, was marked by an excessive rainfall—the wettest of six wet years—and by cloudy skies. This had the advantage of lengthening the flowering period but it made botanising a less pleasant pursuit. In the South the rainfall was excessive. In Kent, for instance, at

Edenbridge, there fell 43 in. as against an average of 30 in.; Chichester, 38 in. against 28 in.; Holne, South Devon, 70 in. against 59 in.; Barnstable, 43 in. against 36 in.; St Austell, Cornwall, 51 in. against 45 in.; Scilly was nearly normal, 33 in. against 32 in.; Chewton Mendip, 55 in. against 45 in.; Cirencester, Gloster, 39 in. against 30 in.; Ledbury, Hereford, 34 in. against 27 in.; Church Stretton, Salop, 41 in. against 36 in.; Birmingham, 35 in. against 26 in.; Oxford, 34 in. against 23 in.; Cambridge, 24 in. against 21 in.; Chelmsford, 28 in. against 22 in.; Bury St Edmund, 31 in. against 25 in.; Blakeney, Norfolk, 28 in. against 23 in. In Wales the excess in Cardiff was 10 in.; at Aberystwyth, 11 in.; at Llandudno, 4 in., and at Bala, 15 in. Douglas in the Isle of Man had 6.6 in. in excess. The Border counties also had an excess of from 4 to 8 in. Inveraray Castle had a great downfall of 93 in. as against 77 in. Even sunny Grantown had 40 in. as against an average of 31 in., but Ullapool, Torridon, Fort William, and Arisaig had a minus rainfall of 1.5 in. to 2.7 in. Tongue and Wick were nearly normal, and Pomona in Orkney had only 2.33 in. excess. In Ireland, on the whole, there was more rain than normally, Ballynahinch having 10 in. more—71 in. against 61 in., but Omagh in Tyrone had a minus of 3 in. Zetland was abnormally dry and sunny, the best year in memory. In London rain fell on 182 days, 19 more than the average (See *The Times*, January 27, 1928).

The plant discoveries during 1927 have not been sensational, but the steady work on British plants tends to show the extreme variability in Nature and to raise hopes that many more species new to Britain will reward the patient worker. In the new edition of "The British Plant List" attention has been drawn to the additions to the British flora since the first edition was issued 20 years ago. The native species and sub-species have been raised by over 250, the critical genera necessarily accounting for the majority. The twenty years' results will compare favourably with any similar period in botanical history. Such species as *Aquilegia alpina*, *Fumaria occidentalis*, *Sagina scotica*, *Saxifraga Drucei*, *Tillaea aquatica*, *Senecio erraticus*, *Scorzonera humilis*, *Centaurium Scilloides*, *Myosotis brevidens*, *Orobanche reticulata*, *Ajuga genevensis*, *Utricularia Bremii*, *Satureia villosa* (*baetica*), *Ulmus Plotii*, *Rumex arifolius*, *Hydrilla verticillata*, *Orchis praetermissa*, *O. Fuchsii*, *O. O'Kellyi*, *Helleborine leptochila*, *Potamogeton panormitanus*, *Carex microglochin*, *Poa irrigata*, *Botrychium Matricariae*, *Nitella spanioclema*, *Tolypella nidifica* and *Chara muscosa* make a goodly show. There was no discovery in 1927 so outstanding as that of *Carex microglochin* in 1926, but Dr Drabble has named a new Violet, *Viola orcadense*, and a new variety of *Alchemilla* has been found in Teesdale by the writer and subsequently by Miss Todd. It may eventually prove to be a micro-species. Many new Taraxaca have been named by Dr Dahlstedt. Miss Vachell found a variety, *hirta*, of the Wood Betony, in Wales, and a Grass, usually described as a sub-species, *Festuca sulcata*, was found by me in company with Lady Davy in Surrey. Additional evidence respecting the occurrences of *Botrychium Matri-*

cariae in Scotland was obtained. These are more fully alluded to under new species. Messrs Melville and Smith, among others, have added many aliens to our List.

The moist weather afforded such a resplendent show of *Ranunculus acer* as I never before witnessed. The pastures on the gault, especially in the vale of the White Horse, were conterminous sheets of gold. In later months the Yarrow was in magnificent bloom over a great extent of country, and the fruits of the Ash were abnormally abundant.

The publications of the year are reviewed in the subsequent pages. Much good work has been produced. Among the local floras it is a source of relief to me to see the second edition of the "Flora of Oxfordshire" produced, the first being issued in 1886, forty-one years ago. It is a great pleasure to me that the Rev. F. Bennett, who corrected the proof sheets of the first edition, should have performed the same duty for the second. "Nature," "The Gardeners' Chronicle," "The Journal of Botany," "The North Western Naturalist," and "The Irish Naturalist" all show evidence of vitality. Mrs Dent and her energetic assistants keep up the popularity of the Wild Flower Society with undiminished vigour and thus spread the interest in Field Botany among the rising generation.

The County Records are fully up to the average. Such extensions as the discovery by Mr A. Wilson of *Stachys alpina* in Denbigh, by Mr Meade Waldo and Mr Justice Talbot of *Bartsia viscosa* in Kent, by the Rev. E. M. Reynolds of *Scirpus rufus* in Norfolk, by Miss Vachell and Miss Insole of a new locality for *Liparis* in Glamorganshire, by Mr T. Gambier-Parry's find of *Potentilla verna* in Jersey, by my own finds of *Euphrasia hirtella* in Scotland, of *E. atroviolacea* in Forfarshire, of *E. septentrionalis* in W. Sutherland, by Mr Trapnell's discovery of *Thymus zetlandicus* in Kerry, are notable additions to Topographical Botany.

We are greatly indebted to Dr S. H. Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Parry, Mr R. H. Corstorphine, Mr W. H. Pearsall, Dr Drabble, Rev. H. J. Riddelsdell, Mr W. Watson, Mr W. O. Howarth, Col. A. H. Wolley-Dod, Mr J. Fraser, Mr D. Lumb, Mr A. E. Wade, Mr A. Bennett, and Mr R. Butcher for literary and critical assistance.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and the Natural History Museum, Cromwell Road, we are also indebted for help. Among foreign botanists we are especially grateful to Dr Albert Thellung for naming the adventives. M. Paul de Riencourt has kindly determined the Leguminosae, Dr K. Ronniger the Thymes, Dr Dahlstedt the Taraxaca, Dr E. Almquist the Shepherd's Purses, and Dr J. Murr the Chenopods. Dr C. Lindman, Dr R. Danser, Prof. C. H. Ostenfeld, and Prof. J. Holmboe have also placed us under great obligations.

Our new members for 1927-28 include:—Miss Ackerley (1928); Sir Maurice Abbot Anderson, K.V.O.; Hon. Mrs A. Asquith; Mr C. Amherst; Mrs Beck; Messrs J. H. Bowman, A. R. Bulley, A. K. Bulley,

W. W. Boucher; Mrs Burdon; Mr F. R. Browning; Mrs Cartwright; The Cleveland Naturalists' Field Club; Mr H. W. Clear (1928); Mrs R. Davies; Commander H. Formby; Mrs Murray Guthrie; Dr J. Griffith; Mrs M. Hall; Mr J. Halsley (1928); Rev. D. M. Heath; Mrs Carl Holmes (1928); Mr Huish; The Marchioness of Lansdowne; Mr Frank Lascelles; The Marchioness of Lincolnshire; The Baroness Lucas; Messrs J. E. Lousley, S. P. Mercer, S. K. Mukerji, F.L.S.; Miss and Miss B. J. Macdougal; The Hon. Sidney Peel; Miss E. Pugh; The Hon. Mr Justice Roche; Miss Salmon; Miss C. Stevens; Mrs M. E. Stewart; The Seed Testing Station, Cambridge; Major-General F. C. Stern; Messrs G. H. Stevenson, F. A. Souter; Mrs Theobald; Prof. A. G. Tansley, F.R.S.; Mrs Trevor Tyler (1928); Sir James Watt (1928); Major Guthrie Watson; Colonel G. Watts; Rev. J. Webster, and Mr V. C. Wynne Edwards.

Our death roll fortunately has not been so serious as in some preceding years, yet in the death of Dr B. Daydon Jackson, botany has lost a born indexer, and the Linnean Society a long and devoted servant and biographer. Mr Linnaeus Cumming, an old science teacher at Rugby and an industrious collector of Rubi; Mr St J. Marriott, a zealous and acute worker, and the Rev. J. Roffey, a keen student of the Hieracia, are great losses to our Society. An expert on British Hieracia is sadly needed. Our ranks also have been thinned by the deaths of Miss Pomeroy, Norfolk; Mrs Bruce, Zetland; Mr Hayes, Keswick, and the Rev. Paul Bevan.

We congratulate the Worcestershire Naturalists' Club on their jubilee celebration, the Club being founded in 1877. Their first President was the well-known botanist, Edwin Lees. A very enjoyable reunion took place. The dinner was held in the Shirehall, Worcester, under the presidency of R. C. Grant, M.Sc. The menu was adorned with a picture of *Cephalanthera longifolia*. On October 6th, a Fungus foray was made in Shrawley Woods under the leadership of Mr Carleton Rea, B.C.L., who was my kind host during the celebrations. Many interesting species were noted. *Campanula patula* was in flower, and the writer detected the same form of *Cardamine impatiens* which had already been found by Mrs Stewart in another area of Worcestershire. I have named it var. *poteriifolia*, the leaves in outline recalling those of *Poterium Sanguisorba*. The Secretary, Mr W. J. Else, made most excellent arrangements for this interesting and successful meeting. The Cardiff Naturalists' Society also held some very successful meetings in celebration of its Diamond Jubilee. The Hon. Secretary, Mr D. H. Morgan, is to be most heartily congratulated upon the excellent arrangements made for the comfort of visitors under the presidency of Mr T. W. Proger. Excursions of a very pleasant nature were made to the Caerleon excavations and to Llandaff Cathedral. The dinner, held in the Whitehall Rooms, on November 2, 1927, under the chairmanship of the President, T. W. Proger, F.Z.S., was a great success, as was the reception held on October 27 in the National Museum of Wales, under the auspices of the President and Council. A Reception and Dance was given by the Lord Mayor in the splendid municipal buildings. An interesting lecture on "The History of the Society" was given in the Whitehall Rooms by A. W. Sheen, C.B.E., M.Sc., etc. Enjoying the hospitality of Mrs Vachell, an opportunity was given of visiting, with Miss Vachell, Nash Point to see the new variety of *Stachys officinalis*—var. *hirta*, which she has detected there. Near by it was my good fortune to see *Hedera Helix*, var. *sarniensis*, in some quantity. The visitors were entertained to tea on 4th November at Cardiff Castle by the Marquis of Bute, K.T.

We congratulate Sir W. T. Thiselton Dyer who, on 28th January, reached the age of 84. He and Lady Dyer celebrated their golden wedding on 23rd June. The Linnean Gold Medal for 1927 was awarded to Dr Stapf, the editor of "The Botanical Magazine." The Annual Medal, awarded by the Massachussetts Horticultural Society in 1927, was given to Dr Liberty Hyde Bailey of Ithaca, the well-known author of the "Standard Encyclopaedia of Horticulture." Sir Frederick Keeble, K.B.E., under Rule 11, has been made a Member of the Athenaeum. Lord Lambourne also receives congratulations upon his receiving the K.C.V.O. in the Birthday Honours List. His portrait is in the "Gardeners' Chronicle," 143, 1927. Very hearty good wishes are offered to Dr A. G. Tansley, F.R.S., the well-known British exponent of Ecology and editor of "The New Phytologist," upon his election to the Sherardian Chair of Botany at Oxford in January last. An appreciative article, with a portrait, appears in the "Gardeners' Chronicle" 183, 1927. His predecessor, Dr S. H. Vines, F.R.S., is one of the two scientists to receive the title of Emeritus-Professor at Oxford. We are also glad to see that Sir John B. Farmer has been elected one of the six British Honorary Fellows of the Botanical Society of Edinburgh.

My own field work during 1927 did not afford any startling discovery. In March the Canary Islands were visited. The botanical results are described in another place, but before sailing I went to Biddesden where *Taraxacum subdilatatum* was found., and with Mrs Baring, Mr Justice Talbot, and the Rt. Hon. H. Baker, I went to see the display of Crocus at Inkpen. The plant had been nearly extirpated by raiders in past years but now, under careful watchfulness, the Crocus is spreading again. Incidentally one came to hear of its introduction to this Berkshire locality where it looks so very much like a native. Over 70 years ago the occupier of the field brought back from Littlecote a load of garden rubbish among which he noticed some bulbs. The refuse was spread over the land and next year the Crocus appeared, and it has rapidly increased. Downton, near Salisbury, was searched for *Asarum*, long known to grow there. It is apparently spreading. In the Moot *Galanthus* was in great plenty with other relics of cultivation. Visits were paid to Stansteadbury and Cambridge, and then to Bacres to Miss Grenfell's, when a visit to Dropmore resulted in the hybrid, *Viola canina* × *lactea*, being found. The Fritillary was seen in great profusion at Swallowfield, many of the plants being white flowered. Barnack quarries in Northamptonshire gave a great show of *Aceras* and *Pulsatilla*. The Souththorpe marsh afforded *Carex elata*, *Orchis incarnata* and its hybrid with *O. praetermissa*, the last species very showy as was also its hybrid with *Fuchsii*. The Huntingdonshire side of the River Nene afforded *Cirsium eriophorum*.

A section of our members, brought together under the aegis of the Hon. Mrs Adeane and Hon. Mrs G. Baring, met at Weston-super-Mare when, under the very efficient guidance of Mr W. D. Miller (who gives an account in subsequent pages), a most enjoyable programme was carried out, almost all of the characteristic plants of Cheddar, the Mendips, Glastonbury moors, etc. being seen. The members were glad to notice that *Dianthus caesius* was flowering freely, and much of it beyond the reach of marauders. The hybrid *Helianthemum*, white-flowered *Vicia Orobus*, and *Orchis hircina* were noted. The party which included, in addition to those mentioned, Mr Justice Talbot, Miss D. Meynell, Hon. Miss E. Elphinstone, Miss Robinson, Hon. Mrs and Miss Campbell, then went on to Cardiff where Miss Vachell acted as leader. This also proved a most successful meeting. Mr R. L. Smith, Mr A. E. Wade, and others were most kind in showing the adventives at Barry and Splott. The rare plants of Gower, including *Draba aizoides* and *Adiantum Capillus-Veneris* were seen and the party were fortunate to add a fresh locality for *Equisetum hyemale* close to Cardiff. By the kindness of the authorities of the National Museum of Wales that splendid building was inspected at an unwonted hour. The members are greatly indebted to Mr W. D. Miller and Miss Vachell for their untiring efforts to make the expeditions successful. One may add that *Orchis incarnata*, var. *dunensis* was in great beauty at Kenfig.

At the end of June the neighbourhood of Culeaze in Dorset was explored with my kind hosts, Major and Mrs Guthrie Watson. The meadows were full of *Orchis praetermissa* and its hybrids with *Fuchsii* and *maculata*. The following day the New Forest was explored and *Gladiolus* seen in bud. At Ridge *Scorzonera* was mainly over flower. I think it is indubitably native, and it has a much wider range than was at first thought. As the guest of the Rt. Hon. Harold Baker at Crabwood, near Winchester, some interesting species were seen. *Lobelia urens* was much more plentiful than usual at Hinton. Several aliens were obtained at Christchurch, and some species of *Thymus* were added to the Hants flora. Miss Grenfell entertained several members at Bacres, including the Countess of Mexborough, the Hon. Mrs Adeane and Miss Vachell. *Cynoglossum germanicum* was in good growth at Pyrton, and *Ornithogalum pyrenaicum* was noticed at Compton in Berkshire and *Leucojum aestivum* at Hambledon. On the 28th, the Hon. Mrs Baring, Mr M. and the Hon. Mrs Adeane and myself went to Southport to see the Eclipse, of which a good view rewarded us for the night journey. A rush to the Birkdale Sandhills gave us *Orchis incarnata*, var. *dunensis*, *Thymus pycnotrichus*, as well as a new modification of *Anthyllis*, in addition to the well known species which grow there. In early July the Countess of Buxton entertained several members at Newtimber, and a visit to Berwick Wood enabled us to see *Phyteuma spicatum*. An expedition to Arundel and Amberley allowed us to visit the chief plants of that interesting area, but, alas, the last root of *Orchis hircina* had been removed. Later in the month, under the guidance of Messrs R. Melville and R. L. Smith, Mrs Wedgwood and I explored the immense dumping ground of Metropolitan refuse at Dagenham. The adventives which occur there will be the subject of a special article by our industrious leaders. The special features there were the thickets of *Heracleum Mantegazzianum* and *Rumex Patientia*, the former making almost a forest with its gigantic growth. In the Hackney marshes the features were the fine growth of *Archangelica*. At Dagenham I got a new variety of *Medicago sylvestris*, named by M. P. de Riencourt as *cyclocarpa* Hy. Later in the month Lichfield was visited and Sir Roger Curtis motored me to Burton-on-Trent. The sunless summer had proved inimical to the growth of aliens. Not a plant of the thousands of *Herniaria hirsuta* of last year was to be seen. However the search was rewarded by finding thousands of *Festuca Danthonii* (*ciliata*) in good condition, and an undescribed Dandelion of the Vulgaria section. *T. brachyglossum* and *T. fulvum* were gathered there also. In the canal near Micklem Cross, *Zannichellia repens* was added to the Staffordshire flora.

Towards the end of the month I again visited Banchory in Kincardineshire in search of *Botrychium Matricariae* but it was a vain quest. We were directed to the precise spot where Mr Sim had gathered it in 1872, but the place—a grassy roadside bank—is not now in so favourable a condition for fern growth. Moreover, *B. Matricariae* is known to be uncertain in its appearance, or rather perhaps has no long life. However, through the kindness of Mrs White, a sister of Mr Sim's, a more complete specimen was given me which proves that the species in question was *Matricariae*. *Cirsium eriophorum*, as an adventive, was found in a pasture field near the Dee. *Alchemilla curtiloba* was obtained near Banchory in Kincardineshire, and also *Tarexacum Kjellmanni*, *Thymus Drucei* and *T. neglectus*. In August a short visit was paid to Ireland, but the persistent wet drove me away. My object was to see the southern form of *Spiranthes Romanzoffiana* so one went by way of Fishguard to Kenmare. Leaving Oxford at 7.30 p.m., we were at Kenmare by 12 noon the next day—a quick journey. Through the kindness of Lord and Lady Lansdowne we motored, along with Lady K. Lambton, to Waterville, but although an arduous search was made not a specimen of the Orchid was to be seen. A second day was spent in motoring down to Derrynane where *Arabis ciliata* was in some plenty on the sand-dunes with *Thymus neglectus*. *Pubilaria planifolia* in good fruit was seen in its old station. A third expedition was made by motor from Kenmare to Berehaven, when after 4½ hours search a single plant of *Spiranthes gemmipara* was seen growing with one plant of *S. spiralis*. It is not safe to decide on the evidence of a single specimen, but there is a difference from the Lough Neagh form. How much this variation is due to the place of growth one cannot say. Here it was in a pasture and not a very wet pasture. By Lough Neagh I saw it growing with its feet in the water as a taller plant with narrower leaves. I scarcely think they are specifically distinct. In any case I doubt if Rydberg's *stricta* is more than a variation of *Romanzoffiana*. At Kenmare we got a Dandelion "nearly related" to *T. Koehleri*. On our way home we stayed at Fishguard to see *Anthemis macrantha* which is abundantly naturalised there. At Cardiff we saw *Roemeria* in flower, and Miss Vachell motored us to the Glamorgan sand-dunes where we saw quite a hundred spikes of *Liparis Loeselii*, var. *ovata* and a very interesting form of *Ononis repens*. *Ballota nigra*, var. *mollissima* Druce, and *Trifolium medium*, var. *pedunculosum* were also seen in Glamorganshire. In September the New Forest was again visited and *Senecio erraticus* was gathered. On the way, in Berkshire the latter species, or possibly a hybrid (*intermedius*), was seen at Shefford where *Rumex Weberi* occurred. A late autumnal visit to Lord Dartmouth's at Patshull resulted in finding at Arbury Castle, with Lady Joan Legge, *Alchemilla pastoralis* in its second British locality. Major Woodward showed us a tree, which is a seedling of the Wyre Forest *Pyrus domestica*, in the splendid arboretum there. A short visit to Wilsford for the coming of age of the Hon. Stephen Tennant afforded *Thymus britannicus* and *T. neglectus*.

Grateful thanks are due to all helpers, and may I take this opportunity of thanking also the very numerous writers of congratulatory letters upon my election as a Fellow of the Royal Society. The honour was rendered doubly acceptable because of these most kind congratulations. I had hoped to acknowledge all these letters personally, but, alas, the pressure of work has prevented my doing so. I trust the writers and those who supported my nomination will accept this belated assurance that I am inexpressibly grateful to them.

PLANT NOTES, ETC., FOR 1927.

(Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts; Gard. Chron.* = *Gardeners' Chronicle; Ir. Nat.* = *Irish Naturalist; Journ. Bot. or J. of B.* = *Journal of Botany; Nat.* = *The Naturalist; N.W. Nat.* = *North Western Naturalist; Ph. Journ.* = *Journal of the Pharmaceutical Society.*

1/5. CLEMATIS ORIENTALIS L. Alien, Orient. Hortal. Introduced into Britain in 1731. Mount Joy, Newport, Isle of Wight, Miss MAUD NEALE.

3/6. ANEMONE SYLVESTRIS L. Alien, Europe. In a wood at Beedon, Berks, Mr BUTLER.

6/4. RANUNCULUS AURICOMUS L. See some Recent Advances in our Knowledge of Inheritance in Plants by Prof. F. E. Weiss, F.R.S., in *Manchester Lit. & Phil Soc.* 75, 1926-7. In this interesting paper the author was able to add another instance in unilateral inheritance (See also *Brit. Assoc. Rep.* 404, 1926), which is offered by *Ranunculus auricomus*. The normal form has finely dissected leaves very like those of an ordinary buttercup and flowers also like those of a buttercup with five bright yellow petals. In addition to this normal form, there exists an apetalous form in which the petals are missing, the sepals are more delicate and usually slightly crumpled, yellow on the inside but still green on the outside. They are wider than those of the petaloid form and may be considered semi-petaloid in their development, thus showing a transition which in other members of the family has become complete. Schinz & Keller have a variety with more or less aborted petals—*R. auricomus*, var. *palustris*. Prof. Weiss alludes to *R. pseudopsis* Jord. which Rouy puts as a var. of *auricomus*. His own investigations lead to the conclusion that there are two distinct varieties, one completely apetalous and the other with five distinct petals, and that the intermediate forms with a defective number of petals are of hybrid origin. The figures dissected show radical leaves from plants resulting from a cross of a petaloid form with the apetalous form. Both have leaves

(1) dissected form characteristic of the normal petaloid parent and (2) radical leaves resulting from crossing the apetalous form with pollen of the petaloid form. Both have the type of the apetalous maternal. In the F.2 generation, raised from crosses, a few completely apetalous flowers were observed on a single plant. It is, therefore, probable that the very rare cases of apetalous plants with dissected foliage are descendants F.2 or later forms of hybrid parentage. The offspring in which the apetalous form was the female parent showed a very marked difference from the reciprocal cross just described. With a solitary exception they exhibited solely the characteristics of the female parent. In the next generation of F.2 they remained entirely of the same type. It is obvious, therefore, that while the fertilisation of the petaloid forms with pollen of the apetalous form yields somewhat intermediate offspring the reciprocal cross shows purely unilateral inheritance. We have in Britain, as given in my List, var. *incisifolius* Reichb. and also a form with nearly entire radical leaves, var. *reniformis* Kittel. It is a point whether these are true varieties. The latter approaches *R. cassubicus* in outline.

13/10. **DELPHINIUM EXALTATUM** Aiton. Alien, N. America. Hortal. Introduced in 1758. Stream side, Panchory, Kincardine, G. C. **DRUCE.** Det. J. **FRASER.**

17/1. **BERBERIS VULGARIS** L. The U.S. Department of Agriculture, Bulletin 21, 1544, again calls attention to the importance of eradicating this plant in areas devoted to cereal culture. Since 1918, in the U.S.A., a campaign of eradication of the Barberry has gone on and 14,000,000 bushes have been destroyed. When it is remembered that a single bush may have on it thirty-eight times as many spores as there are people in the world, *i.e.*, 64,000,000,000, the importance of the campaign can be understood. Each of those spores could produce a red rust spore in ten days, and each red rust spore might have 200,000 or more red summer spores, and each of these could again in ten days produce an equal number. Figures like these make one reel. Fortunately every spore does not germinate. In this useful Bulletin the life-history of the Fungus, with illustration, is given, and practical methods of eradicating the pest (salt or kerosene) are described. It is stated that before the campaign began, in Minnesota 20% of the wheat crop was destroyed. This fell in 1925 to 12%. In North Dakota, in 1916, 70% suffered, but this fell in 1925 to 5%. The years selected were just as favourable to rust production as 1916. The estimated average annual loss from 1915-1920 was 50½ millions of bushels of wheat, and from 1920-1925, since the campaign, in round figures only 16,000,000 bushels.

21/2. **PAPAVER RHOEAS** L., var. **WILKSII** Dr. Hortal. The Shirley Poppy. Anthers yellow, flowers pale pink or white. Rubbish heaps, Dagenham, Essex, G. C. **DRUCE**, R. **MELVILLE**, R. L. **SMITH** and Mrs

WEDGWOOD; Didcot, Berks, G. C. DRUCE. A wild form, with yellow anthers, was found at Odiham, Hants, in 1893, by Miss C. E. PALMER.

21/12. P. RUPIFRAGUM Boiss. & Reut. Pugill. Pl. Rar. 6, 1882 = P. ATLANTICUM Ball ex Cosson Fl. Atl. i., ii., t. 6, 1883? Alien, Morocco. Rubbish heaps, Dundee, Angus, July 1927, G. C. DRUCE.

37/9. ARABIS ROSEA DC. Syst. ii., 215, 1821. Alien, South Italy. Allied to *A. muralis* Bert., under which Nyman puts it as a sub-species. Found on a wall at Slinfold, Sussex, by B. REYNOLDS, in 1926. The name is verified by Dr THELLUNG.

39/3. CARDAMINE IMPATIENS L., nov. var. POTERIIFOLIA Dr. In the type plant the leaflets are described by Syme (*E.B.* i., 162) as "¼-1½ inch long, acute, generally cleft into 2 or 3 lobes towards the base." I have never met with so long leaflets. Usually they are under an inch. This variety differs from our common English plant in having the basal leaflets blunt and broad with the outline of those of *Poterium Sanguisorba*, the upper leaflets broader and blunter than in the type, the pods shorter and more spreading and the petals very minute. Mrs C. E. Stuart found a seedling in a pollard willow by the Teme, near Powick Bridge, in the parish of St John's, near Worcester, in 1922, and grew it in her garden whence I had a plant in 1927. On the Fungus foray to Shrawley Wood in September, I found seedling plants with leaflets of a similar outline. Willkomm and Lange (*Prod. Fl. Hisp.* iii., 826) describe the leaflets—"Segmentis numerosis, rotundatis ovalibus, oblongisve mucronulatis," but no mention is made of their being acute or rounded. The facies suggests possible hybridity with *C. flexuosa* With.

Var. PATULIPES Rouy & Foucaud Fl. Fr. i., 238. "Pédoncules très étalés ou même réfléchis; siliques continuant la direction des pédoncules, non rédressées." I have gathered this at Matlock, Derby, and Miss C. E. PALMER had it from Great Malvern, Worcester.

Var. APETALA (Moench) = MINOR Rouy & Fouc. *l.c.* Probably the common British form. Plants of it from Derbyshire have remained constant in my garden for many years. G. C. DRUCE.

48/3. WILCKIA (MALCOMIA) PARVIFLORA (DC.) Dr. Alien. Waste ground, Splott, Glamorgan, March 20, 1927, R. L. SMITH.

55/7. DIPLOTAXIS TENUISILIQUA Delile Ind. Sem. Hort. Monsp. 7, 1847. *D. auriculata* Dur. Alien, N. Africa. Bristol, W. Gloster, C. SANDWITH.

86(2). CAYLUSEA A. St Hil. 2nd Mém. Resedae 29, 1837.

86(2)/1. CAYLUSEA CANESCENS A. St Hil., *l.c.* Alien, North Africa. Splott, Glamorgan, with other aliens. Coll. and det. R. L. SMITH.

88/21. VIOLA ORCADENSIS Drabble in Journ. Bot. 44, 1927. This is the *V. tricolor*, var., Orkney Isles, August 1886, sent by W. R. Linton to the B.E.C., characterised by its large deep blue flowers. Also from Balta Sound, Unst, and from the north shore of Sullom Voe, growing under the low sea bank. W. H. BEEBY, 1886, *in litt.* to Dr Drabble. This is in part my *Lloydii* from Balta. G. C. DRUCE.

96/18. SILENE NOCTURNA L., var. PAUCIFLORA Otth. Par, Cornwall, L. T. MEDLIN.

98/11. LYCHNIS PYRENAICA Berger Fl. Bass. Pyr. ii., 264. Alien, Pyrenees. Hortal. Garden escape, Grouville, Jersey, May 20, 1926, L. ARSENE. Identified at Kew as a form of *Petrocoptis* (*Lychnis*) *pyrenaica*.

101/5. STELLARIA HOLOSTEA L. Birdlip Hill, Gloster, J. W. HAINES. This has narrow attenuated petals. See *Rep. B.E.C.* 216, 1920. Mr Haines has found the same form at Ferryside, Carmarthen, growing with the type. The attenuation of the petals was much marked, the plants were sturdier and the petals longer.

101/5. S. HOLOSTEA L., nov. forma LOUSLEYI Dr. Differs in its much narrower linear petals, 3 mm. wide as against 5 mm. in the type, the petals, too, are more deeply cleft and the segments acute, not obtuse as in the type. The peduncles are much more hairy. Gathered by J. E. LOUSLEY by a roadside at Woldingham, Surrey. G. C. DRUCE.

123/2. TILIA EUROPAEA L. = T. VULGARIS Hayne. On the Seedling structure. See *Journ. Linn. Soc.*, 329, 1926.

127/27. GERANIUM SIBIRICUM L. Dagenham, Essex, R. MELVILLE and G. C. DRUCE.

132/1. OXALIS ACETOSELLA L. Contains 0.86 per cent. of binoxylate of potassium. ISABELLA A. PURDIE in *Ph. Journ.* 105, 1927.

146/1. LABURNUM LABURNUM (L.) is known from *L. alpinum* by its foliage being duller in tint and by being more or less hairy.

149/2. ULEX GALLII Planch., var. BREVIALATUS Riencourt. Chapel-en-le-Firth, Derby, G. C. DRUCE.

151/3. ONONIS SPINOSA L., var. PARVIFLORA (Rouy). *O. antiquorum* Vill. non L. Plants more slender, with diffuse stems; spines strong; leaves much smaller than type. On the slopes near Ivinghoe Beacon, Bucks, 1927, G. C. DRUCE. Det. P. de RIENCOURT.

153/2. MEDICAGO SYLVESTRIS Fries, var. CYCLOCARPA Hy. Dagenham, Essex, July 1927. G. C. DRUCE, R. MELVILLE and R. L. SMITH.

153/4. M. POLYCARPA Willd., var. OLIGOCARPA (Corb.) Rouy. *M. denticulata* Bréb. non Willd. Littlehampton Common, Kent, Dr H. Bancroft. Det. P. de Riencourt.

153/4. M. LAPPACEA Desr., var. SARDOA (Moris p.p.). Hackney, Middlesex, G. C. Druce, R. Melville and R. L. Smith.

153/5. M. ARABICA Huds. In Britain it appears in two varieties:—(1) The type with relatively conical subulate spines but little curved from below the middle, not so long as the legume is broad. (2) Var. LONGISPINA Rouy Fl. Fr. v., 35, 1899, which has the subulate spines very bent and much longer than in var. a. I collected it at Abingdon, Berks, and Portmadoc, Carnarvon, in 1917, and it exists in my herbarium (as *maculata*); less well marked from Afton Down, Isle of Wight; Odiham, N. Hants, 1890, C. E. Palmer, and Acton, Middlesex, 1902, A. Loydell. Mr Gambier-Parry has it from Kingston-Bagpuize, Berks, in 1927, well marked and like my Abingdon specimen, Druce.

153/19. M. TUBERCULATA Willd., var. BREVISPINA Rouy. Burton-on-Trent, Staffs, G. C. Druce.

154/4. MELILOTUS INDICA All., var. EXALTATA Biv. Splott, Glamorgan, G. C. Druce, R. Melville and R. L. Smith; Ware, Herts; near Bristol, W. Gloster, G. C. Druce. Plant 4-8 dcm.; leaves like that of type but larger; inflorescence laxer, 1½-2 times longer than leaf.

155/1. TRIFOLIUM MEDIUM Huds., var. PEDUNCULOSUM Seringe. Near St Donats, Glamorgan; Banchery, Kincardine, G. C. Druce.

Var. BRACHYCALYCINUM Rouy. Buriton, Surrey, W. Biddiscombe.

155/2. T. PRATENSE L., var. PARVIFLORUM Bab. Rouy (*Fl. Fr.* v., 120) treats this as a "forme"—*T. brachyanthum* Rouy—differing from *pratense* "dents calicinales, même les supérieures, plus longues que le tube, toutes plus longues que la corolle, ce qui rend les capitules chevelus même à l'anthèse, capitules petits, le plus souvent géminés, plus ou moins pédonculés, surtout l'axillaire." He gives two varieties—a. *genuinum* and b. *heterophyllum*, the latter a more slender plant, with elongated stems, small leaves, the upper smaller and narrower than the lower, analogous to the var. *heterophyllum* of *T. pratense*. This, identified by P. de Riencourt, grew in a large patch by the roadside near Yarnton, Oxon, where it was shown me by T. Gambier-Parry.

155/7. T. ARVENSE L. M. P. de Riencourt identifies plants which I gathered at Christchurch, S. Hants; Cardiff, Glamorgan; Burton-on-Trent, Staffs, and Dundee, Angus—all on waste and disturbed soil—as *T. Brittingeri* Weitenw. This, I believe, is synonymous with the var. *strictius* Koch. G. C. Druce.

155/10. T. ELEGANS Savi, a fistulose form. Barry, Glamorgan; Dundee, Angus, G. C. DRUCE; Dagenham, R. MELVILLE.

Var. PHYLLANTHUM. This teratological condition was found at Marlborough, Wilts, by Mrs Wedgwood, and I saw it also at Didcot, Berks, and at Burton-on-Trent, Staffs, G. C. DRUCE.

T. ELEGANS × HYBRIDUM ? M. P. de Riencourt queries some plants which I gathered with both parents on waste ground near Didcot, Berks, and at Ashby-de-la-Zouche, Leicester, G. C. DRUCE.

156/1. ANTHYLLIS VULNERARIA L., modif. NORMANNIAE Riencourt. On the Birkdale dunes, S.W. Lancs, on the Eclipse day, 1927, G. C. DRUCE, Hon. Mrs ADEANE and Hon. Mrs GUY BARING.

Sub-var. CAMPANIANA Rienc. *in. litt.*, modif. ELONGATA with the above.

160/5. LOTUS CORNICULATUS L., var. ARVENSIS Ser., modif. ELONGATUS-BRACHYODON Rienc. Banchory, Kincardine, G. C. DRUCE. Modif. PARVIFOLIUS (Rouy) Rienc. Cardiff, Glamorgan, G. C. DRUCE.

160/7. L. HISPIDUS Desf., var. SUAVEOLENS (Pers.). St Brelade's, Jersey, L. ARSENE. This is synonymous with the var. *major* Rouy, already described in our *Report*.

169/1. SCORPIURUS SULCATA L. is figured in *Gard. Chron.* 49, 1927. This native of the Mediterranean will grow well in sunny places in light soil in England, and is interesting on account of its caterpillar-like legumes.

176/3. VICIA CRACCA L. Our common form is that figured in Curtis *Fl. Lond.* t. 101, which is the *imbricata* of Gilibert. Rouy gives var. α *latifolia*, which is common as at Barry, Glamorgan; Alton, Hants, etc.

176/4. V. OROBUS DC., modif. MICROPHYLLA, teste P. DE RIENCOURT. Maenclochog, Pembroke, H. ARNETT.

176/6. V. VARIA Host, var. GLABRESCENS (Heimerl.). Burton-on-Trent, G. C. DRUCE; Hackney, Middlesex. G. C. DRUCE, R. MELVILLE and R. L. SMITH.

176/13. V. ANGUSTIFOLIA Reich., var. LUTESCENS Corb. Porth, Newquay, Cornwall, C. C. VIGURS; St Osyth, Essex, 1902. See C. E. SALMON in *Trans. Linn. Soc.*, 1926. I have it in my herbarium from St Osyth, Essex, gathered in 1898. G. C. DRUCE.

176/14. V. LATHYROIDES L., var. OLBIENSIS (Reuter & Shuttleworth ined. ex Rouy Fl. Fr. v., 216, as a "forme"). Stem elongated (2-4 dem.); leaves proportionately narrower and longer, the leaflets of the lower leaves oblong-cuneiform, of the upper leaves narrow, sublinear, attenuate, and apiculate at the top; tendrils of the upper leaves much longer than the other leaflets and strongly circularly recurved at the apex; pods longly and feebly incurved. Frilford, Berks, G. C. Druce.

Var. parva Rienc. Southport, Lancs, G. C. Druce.

176/36. V. gracilis Lois. Our British plant has smooth pods—*leiocarpa* Gren. & Godr. The hairy-podded form, *eriocarpa* Gren. & Godr., should be searched for.

182(2). Cassia L.

182(2)/1. Cassia nictitans L. Alien, N. America. Barry, Glamorgan, R. L. Smith.

185. Rubus fruticosus (which species?). In New Zealand there is said to be only one Blackberry bush, but that is 200 miles long. *Ulex europaeus*, *Senecio Jacobaea* (called horse-poison there) and *Hypericum perforatum* are weeds which are menaces in the Antipodes.

189/26. Potentilla Vilmorinciana Korn. Alien. Hortal. Well established in an open copse, Glen Car, Letterkenny, Donegal, F. R. Browning.

190/17. [Alchemilla crinita Buser], var. britannica Jaquet & Druce. Damp pastures, Teesdale, Durham, 1925, G. C. Druce; 1927, Miss Todd. Closely resembles *crinita* in its habit, form of leaf, leaf-lobes and leaf-cutting and in the shape of the urceoles, but it differs in the leaf-colour which is green-glaucescent, not dull yellowish-green, in the pubescence being shorter and less dense, and the flowers have hairs. These characters may prove specific but for the time it has been thought best to connect it as a variety with *crinita* until study of it *in situ* may confirm or contradict this suggestion. F. Jaquet and G. C. Druce.

194/6. Rosa lutetiana × rugosa. Growing with both parents about 100 yards south-west of the Episcopal Church, Cushendun, Co. Antrim. The suckers, bud-shape, sepals and petal-colour are those of *rugosa*, but its stem prickles, leaves, stipules, and fruit take after *lutetiana*. The shape of the prickles and size of the flowers are intermediate. R. L. Praeger in *Ir. Nat.* 258, 1927.

194/7. R. dumalis Bechst. In my "Plant List" of 1908, feeling sure that there was a doubt as to what *dumalis* was, I used *R. sarmentosa* Woods in *Trans. Linn. Soc.* 213, 1817, to designate this biserrate which Déséglise had identified as *Rosa dumalis* Bechstein. Prof. G. Boulenger has ascertained that the oldest name is *R. squarrosa* Rau Enum. Rosa. Wirceb. 77, 1816, which is one year earlier. In *Bull. Bot. Belg.* 113, 1927, he states that he would use *dumalis* of Bechstein published in 1810 instead of *glauca*, since Pourret had used in 1788 that name for a different species from that of Villars, which dates from 1809 and which must be dropped. Bechstein's description of *dumalis* in Forstbotanik of 1810 is, says Boulenger, excellent and detailed, and the spreading sepals crowning the fruit in September show that it is not a canina Rose. C'est donc sans le moindre hésitation que je propose d'adopter le nom proposé par Bechstein, qui doit remplacer celui de *R. glauca* préoccupé, pour l'ensemble des formes réunis par Crépin, donc *R. dumalis* devient la forma *typica*, embrassant le *R. Delasoiei* Lagg. et Pug. et le *R. Reuteri*, f. *myriodonta* Christ. In my List N.935, with the assent of M. Crépin, I identified the *Rosa caesia* Sm. in *Eng. Bot.* t. 2367, 1811, as the earliest name for the plant usually called *R. coriifolia.* Boulenger says " D'après les déscriptions et la figure, j'avais d'abord cru devoir considérer cette Rose d'Ecosse comme une variété du *R. canina.* Mais un examen des échantillons types provenant de l'herbier Sowerby, conservés au British Museum, m'a fait revenir à l'opinion de Crépin qui, en 1896, avait identifié le *R. caesia* avec le *coriifolia*. . . Le *R. caesia* devient donc *R. dumalis* [*glauca*], var. *caesia*."

195/4. PYRUS (SORBUS) DOMESTICA Ehrh. Our member, Mr C. Nicholson, gives an account, with a photograph, in the *Gard. Chron.* ii., 304, 1927, of a tree at Hale End. It is 65 feet high and its bole at 5 feet from the ground has a diameter of 3 ft. 6 in. Its spread of foliage is 85 ft. It may be added that the Goodwood Service Tree is 40 ft. high, 2 ft. in girth, and the circumference of the area covered by its branches is 150 ft. (See " Trees of Goodwood " by the Duke of Richmond and Gordon). This year I saw at Arley Castle, Worcestershire, a seedling of the Wyre Forest tree, and there is another in our Botanic Gardens at Oxford said to have been planted by Sibthorp, which is now 50 ft. high with a girth of 5 ft. 4 in.

211/17. SEDUM HISPANICUM L., var. MINOR Praeger. Alien, Spain. On walls at Garford, Berks, well naturalised. G. C. DRUCE.

211/21. S. DENDROIDEUM Moç. & Lesse. Alien, Mexico. Completely naturalised on rocks above quarry, St Catherine's Bay, Jersey, L. ARSENE. This is what I recorded in 1920, as *Sempervivum arboreum*, and replaces that record, G. C. DRUCE.

231/3. CUCUMIS MELO L. Tropics. Dagenham, Essex, R. MELVILLE and R. L. SMITH.

265/6. OENANTHE LACHENALII Gmel., var. MINIMA Rouy & Camus Fl. Fr. vii., 260, 1901. Rhoscolyn, Anglesey, Rev. W. WRIGHT-MASON; near Derrynane, Kerry, with the type. It forms rosettes with stems almost obsolete, umbels of few, 5-8 rays, involucres practically absent, involucels small or obsolete, leaf segments few, sometimes with a long terminal lobe. G. C. DRUCE.

275/1. ARCHANGELICA ARCHANGELICA (L.) Karst., nov. var. (vel lusus) BRACTEATA Dr. It does not appear to be mentioned in the chief European Floras. Plants with the umbels strongly bracteate have been sent by Miss Ackerley from grassy places in the grounds of Milton Vicarage, W. Riding, Yorks, and from banks of the Medway between Maidstone and Aylesford, Mrs Davies. If one follows the "Actes" it will read *A. officinalis*, var. *bracteata* Dr.

302/1. Kentranthus ruber (L.) Dr. Llandudno, Carnarvon, C. Waterfall, as a white-flowered, narrow-leaved form, f. lanceolata Dr. of *K. ruber*. In true *angustifolia* the spur is short, not exceeding the ovary in length. G. C. Druce.

312/1. Solidago Virgaurea L. In Sweden Turesson describes four sets of ecotypes—alpine (4000 ft.), sub-alpine (2700 ft.), lowland, woodland. West coast somewhat variable, perhaps produced by intercrossing of the foregoing. The results, so far as they go, entirely support the view that the majority of habitat types are genetically distinct. Prof. Drummond (President's Address, Edinburgh Botanical Society, 1926) says that the results promise to provide a salutary check upon the extravagances of the ultra Mendelian tendency. It compels the geneticist to face squarely the question of adaptation which both Mendelians and Mutationists are inclined merely to shelve as incompatible with their particular theories.

312/1. S. Virgaurea L., nov. var. (vel forma) interrupta Dr. Inflorescence narrow, much interrupted; flowering spikes sometimes 12 inches long; flower clusters of 2 or 3 or rarely 10 flowers. Shores of Lake Windermere, 1915, W. H. Pearsall; Erwood, Radnor, A. Ley; Badby Wood, Northants, 1876, G. C. Druce.

Nov. var. (vel forma) dentatifolia Dr. Leaves narrowly elliptic, coarsely but rather deeply toothed. Lamorna Cove, Cornwall, 1910, H. E. Fox. G. C. Druce.

328/2. Gnaphalium uliginosum L., var. pseudo-pilulare (Asch. & Graebn.) Scholtz. Parkstone, Dorset, 1927, L. B. Hall and J. E. Little. Ascherson and Graebner describe *pseudo-pilulare* as "Pflanze filzig; hüll blätter dunkel braun; frucht kurzhaarig." This woolly plant is not var. *pilulare* Wahl., which has stem and leaves glabrous. J. E. Little.

328/2. G. uliginosum L., var. glabrum Koch. A form closely allied to, if not identical with, this glabrous form of *uliginosum* was gathered by Lady Davy with the type and in great quantity in Kent.

347/12. Helianthus tuberosus L., as a Crop Plant. H. D. Shoemaker, U.S. Dept. Agriculture, Washington, n. 33, 1927. As we know there is an early record of this plant in Johnson's "Gerard" of 1633, and it was probably introduced into Britain in 1616, but Lacaita (*Bull. Roy. Bot. Kew*, 321, 1919) says its earliest record in Europe is Colonna (Ecphrasis) in 1616, who figures it from the garden of Cardinal Farnese at Rome. Lauremberg describes it as being grown in the Baltic in 1632. Champlain in his Voyages and Explorations saw it in the garden of the Indians at Mallebarre, near Cape Cod, in 1605. It seems now to have entirely disappeared from that area. Its native home is usually given as from New York to Minnesota southwards to Georgia and Arkanzas. Artichoke contains inulin. Its use is recommended in diabetic cases. The paper is an excellent one with a copious bibliography.

383/3. SENECIO AQUATICUS Huds. As Dr Thellung says, it is impossible to draw a sharp line between this species and *S. erraticus* Bert. Indeed Rouy (*Fl. Fr.* viii., 336) unites under the head species *Jacobea* L. both *aquaticus* and *erraticus* with *Jacobea* Huds. It will be well to give to these divergences towards *erraticus* a varietal name under AQUATICUS as var. INTERMEDIUS. Such varieties are in my herbarium from Odiham, N. Hants, 1895, C. E. PALMER; Shefford, Berks, and New Forest, S. Hants. They have the more straddling and more compound leaves of *erraticus*, but the size of the fewer flower heads is that of the type. G. C. DRUCE.

Taraxaca, determined by Dr H. DAHLSTEDT.

ERYTHROSPERMAE.

423/10(2). TARAXACUM RUBICUNDUM Dahlst. in Om Scand. Tarax. in Bot. Notiser, 1905. Sweden, Finland, Austria. Gathered on Steep Holme, N. Somerset in 1909 with W. A. HARFORD; on light sandy soil (Northamptonshire Sands), Redhill, Northants, 1927, G. C. DRUCE.

SPECTABILIA.

423/16. T. BIPINNATIFIDUM (Rostrup) Dahlst. Westray, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 417, 1927.

423/18. T. CHLOROLEUCOPHYLLUM Dahlst., nov. sp. Sanday, Orkney, H. H. JOHNSTON, *l.c.*, 418, 1927.

423/32. T. SERRATILOBIUM Dahlst., nov. sp. Holm, Mainland, Orkney, H. H. JOHNSTON, *l.c.*, 419, 1927.

423/33. T. SHETLANDICUM Dahlst., nov. sp. Fetlar, Zetland, H. H. JOHNSTON, *l.c.*, 429, 1927.

VULGARIA.

423/52. T. DILATATUM Lindb., forma OPINA Dahlst. Biddesden, Wilts, G. C. DRUCE.

423/54. T. DUPLIDENTIFORME Dahlst. (modif.). Radyr, Glamorgan, G. C. DRUCE.

423/58. T. FULVICARPUM Dahlst., nov. sp. Papa Westray, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 421, 1927.

423/65. T. Koehleri Dahlst. (modif.). Mansfield, Notts [AA.50]; nearly related to this from Cardiff, Glamorgan, and Kenmare, Co. Kerry, G. C. **Druce**.

423/81. T. praeradians Dahlst. Arkiv. för Bot., n. 10, 1910. Sweden, etc. Radyr, Glamorgan, G. C. **Druce**.

423/78. T. perlaciniatum Dahlst. Roade, Cosgrove, Redhill, Northants; as a broad leaved form, Oxford; Lambridge, Oxon; Cothill, Berks, G. C. **Druce**; St Helen's Spit, Isle of Wight, Miss **Todd**; as a small form, Penarth, Glamorgan, G. C. **Druce**; Holm, Mainland, Sanday, Orkney, H. H. **Johnston** in *Trans. Bot. Soc. Edin.* 422, 1927.

423/84. T. sinuatum Dahlst. Cardiff, Glamorgan, G. C. **Druce**.

423/85. T. subdilatatum Dahlst., nov. sp. Near Uffington Station, and Cothill, Berks [PP.94], July 1927; Barry, Glamorgan; St Giles, Oxon (modif.); Shefford, Berks (modif.); Didcot, Berks (forma); Biddesden, Wilts, G. C. **Druce**.

423/87. T. sublaciniatum Dahlst. (modif.). Oxford, G. C. **Druce**.

430/1. Scorzonera humilis L. In May 1927, Surg.-Capt. Borrett brought me, for naming, a flower of this species which he had picked in Dorset at a place more than seven miles distant from the known locality for this plant. I went there with him on June 1st and found a well-grown colony comprising more than thirty plants, all growing within an area of about fifty square yards, on wet grassy peat. Most of the plants were in flower. This record supports the view that the species is native in Britain. L. B. **Hall**.

435/12. Campanula Portenschlagiana R. & S. Alien, Dalmatia. Hortal. Cardiff, 1922, R. L. **Smith**.

438/2. Vaccinium Myrtillus L. Mr R. B. Cooke sends from Dipton Wood, S. Northumberland, two forms of *Myrtillus*, one with leaves about 15 mm. long by 4 mm. broad, the other with leaves 30 mm. long by 20 mm. broad. Mr Cooke has grown the former in his garden for 5 or 6 years, and the latter for about 18 months. They retain their characters. The latter grows to 3 or 4 feet high in the wood. It may be provisionally called *platyphyllum*. G. C. **Druce**.

458/2. Statice pubescens Sm., nov. var. Weyeri. Found by W. Van de Weyer on the Dorset coast at Kimmeridge. He has cultivated it and seedlings of it exhibit the same characters. It differs from the type in having the upper part of the corolla papyraceous, colourless, and transparent. G. C. **Druce**.

467/3. Anagallis foemina Mill. At a recent meeting of the Linnean Society of London, Dr A. B. Rendle, F.R.S., President in the chair. Miss Eleanor Vachell gave an account, illustrated with coloured lantern slides, of an unusual specimen of *Anagallis*. The plant of *Anagallis* was noticed in a newly-constructed public park at Coldknap, Barry, Glamorgan, in July 1926, in a flower border about to be weeded, growing amongst a large colony of normal plants of *A. arvensis*. It had 11 stems—seven bearing scarlet flowers and four bearing blue flowers. Two types, *A. arvensis* L. and *A. foemina* Mill., were apparently represented on the same plant, *i.e.*—Seven stems—Corolla segments scarlet, edge even, fringed with numerous glandular hairs, calyx two-thirds as long as corolla. Four stems—Corolla segments blue, edge denticulate, with very few glandular hairs, calyx as long as corolla. The root appeared normal, no fusion of two roots being visible. The interest of the specimen is that the characteristic features of two species (as usually recognised) are represented, but remain distinct. No particoloured flowers suggested hybrid origin; it appears, rather, that one portion of the plant may have reverted. The capsules on the seven stems bearing scarlet flowers were considerably in advance of those on the four stems bearing blue flowers. The President read the following letter from the Rev. Canon F. W. Galpin on the subject of Miss Vachell's paper:—" With reference to Miss Vachell's interesting exhibit, I should like to state that, in the year 1924, a great quantity of *Anagallis foemina*, together with an abundance of the common *A. arvensis*, was growing in a field near Rivenhall Place, Witham. My neighbour, Mrs Bradhurst, who lives at The Place, and is a good field botanist, observed a plant on which three stems bore red flowers and one stem blue. She transferred the plant to her garden, as the field was shortly coming under cultivation again; there I saw it, but unfortunately, all the flowers had dropped. I am glad, however, that her find, which was somewhat doubted at the time, has now received ample corroboration. In reply to the President, Miss Vachell stated that all the leaves of her plant were like those of *A. arvensis*. Dr Stapf suggested that Miss Vachell's plant was an instance of somatic segregation. He referred to Hoffman's experiments at Giessen and to Professor Weiss's, which showed a high constancy of colour and reluctance to cross. He paralleled the case of *A. arvensis* and *A. foemina* by reference to *A. Monelli* (blue) and *A. collina* (red), which in their native areas are colour-constant. They are, however, to all appearance the parents of our garden Pimpernels, of which seven colour forms were known by 1839. He suggested that these two species should be subjected to genetic experiment, which might throw much light on the problem of our smaller wild Pimpernels. Mr F. J. Chittenden referred to other examples, such as *Primula sinensis* and *Matthiola incana*, in which several characters are affected by a sport. The sport in these cases is due probably to somatic non-disjunction. The sporting *Anagallis* may be heteroxygous for the various *foemina* characters shown by the sport, and the *foemina* characters being linked, the elimination of the homologous *arvensis* chromosome at a somatic cell-division would give a chimera of the type shown. Mr W. B. Turrill urged that further genetical experiments should be made with the blue and scarlet British Pimpernels. He stated that there were other blue forms besides that usually recognised as *Anagallis foemina* Mill., and certainly one in Great Britain, which had the corolla characteristics of *A. arvensis* except that the colour was blue.

480/1. GENTIANA PNEUMONANTHE L. In Anglesey plants with 2, 3, and 4 flowers on a stem occurred, one plant being of a beautiful rose pink. **A. T. JOHNSON** in *N.W. Nat.*, September 1927.

480/3. G. VERNA L. When in Teesdale this year I was told by several people that this plant is gradually becoming much rarer. It appears that it is dug up in large quantities to be sold in the streets of certain northern towns, where it commands a ready sale. It is a great shame that one of our most beautiful and rare native plants should, in spite of its inaccessibility, be raided in this manner. I am pleased to be able to add, however, that the Dalesfolk have no hand in this business themselves, but are extremely proud of their "Gentian." **J. E. LOUSLEY.**

480/4. G. AMARELLA L., forma RUBESCENS ad interim. Kenfig, Glamorgan, Mrs O'CALLAGHAN. This I found also on the Kenfig sand-dunes in 1904, and Miss Vachell has seen it subsequently. The plant needs examining *in situ*, as it may have to be referred to, or placed under, *G. septentrionalis*. **G. C. DRUCE.**

486/1. POLEMONIUM CAERULEUM L., var. DISSECTUM Benth. (not *P. dissectum* Reichb.) = P. SIBIRICUM Don. Alien. Gravel pits, Hayes, W. Kent, **ST JOHN MARRIOTT.** Det **A. THELLUNG.**

515/3. CUSCUTA EPITHYMUM Murr., forma ALBIFLORA. On gorse, Caterham, Surrey, Mrs RICHARDS. An albino form which is apparently scarce. **G. C. DRUCE.**

516/1. LYCOPERSICON has been grafted (*Journ. Genet.*, vol. 18, n. 2) by Jorgensen & Crane on to *Solanum nigrum* and other species, and incomplete periclinals have been formed to which the name mericlinal has been given. The periclinals generally show somatic instability reverting to the pure form which forms the core. In one case of *Lycopersicon* × *S. luteum*, in which there were probably three or four outer layers of *luteum* reversion took place through transitional stages to pure *luteum*. The close relationship of *Lycopersicon* and *Solanum* is accentuated by these experiments.

517/16. SOLANUM CILIATUM Lam. Ill. ii., 21, 1793, et Encl. iv., 297 in Urban Symb. Antill. viii., 622, 1920-1921 = S. ACULEATISSIMUM Sendtn. in Mart. Fl. Bras. x., 59, 1846, p.p. non Jacq. ex Bitter *in litt.* The remarkably spiny *Solanum* which was found on the rubbish tips at Dagenham, Essex, in 1926, was at first identified as *Solanum aculeatis-*

simum Jacq. from the rather poor specimens then found. The plant occurred again in 1927 in greater quantity and was found at Grays, Essex, and near Yiewsley, Middlesex, where London rubbish is also tipped. Some of the seedlings were found in dense tufts, suggesting that they were springing from one fruit, but no remains of a fruit could be found although in some cases the testas of the seeds were left. The seeds were rather large, extremely flat, and had the subreniform outline so often observed in solanaceous seeds. The appearance of the seeds and the occurrence of the plants in this manner suggested that they might be derived from the large red berries which are put on the ends of sprigs of Butcher's Broom and sold in the florists' shops for decorative purposes. One of these berries had been examined by the writer some time previously, but its botanical origin was then unknown although it was evidently of solanaceous type. With the 1927 plants an attempt was made to confirm the original identification. Dunal's monograph described *Solanum aculeatissimum* Jacq. as having yellow berries about the size of a cherry, which would not agree with the suggested origin of the plant on the rubbish. *Solanum ciliatum* Lam., described and figured in the same monograph, agreed with the plant and it also has large red berries. The *Index Kewensis* states that these two names are synonyms and in other works there seemed to be some confusion of these species. In Urban *Symb. Antill.* the two species are separated and the above synonymy given, which makes it clear that the correct name for this species is that of Lamarck. From the above facts there can be little doubt that the origin of the plant, as found, is from the red berries thrown out with household rubbish. These berries appear to be cultivated in France, but the habitat of the plant is given as the West Indies, America, and Tropical Asia. R. MELVILLE.

518/10. PHYSALIS FRANCHETI Masters in Gard. Chron. Alien, Japan. Knocknamonagh, near Old Port, Letterkenny, Donegal, F. R. BROWNING.

519/1. NICANDRA PHYSALOIDES Gaertn. is figured, t. 199, in *Gard. Chron.* ii., 441, 1927.

532/7. LINARIA MINOR Desv., var. PRAETERMISSA (Delast.) Coss. & Germ. Routh Park, Cardiff, 1922. A. E. WADE. Possibly adventive.

532/23. L. MAROCCANA Hook. fil. Alien, Morocco. Hortal. Roadside, Thorner, near York, J. FRANKLIN. Det. J. FRASER, who says it differs from *Pelisseriana* in being slightly hairy, the leaves on the barren shoots are narrower, linear to linear-lanceolate, and longer, 1-1¼ in. as against ¼-½ in. The raceme is more showy with many flowers.

535/3. SCROPHULARIA ALATA × SCORODONIA = × S. TOWNDROWI Dr. Our old member, who has devoted much attention to hybridity in plants, has sent the following note on a plant which appeared in his garden where *S. alata* from Worcestershire and *S. Scorodonia* from Newquay, Cornwall, have been cultivated. Stems slightly winged, much less so than in *alata*, but more so than in *Scorodonia*. Foliage darker than in *alata*, but lighter than in *Scorodonia*. Leaf-stalks flattened as in *alata*. Leaf-toothing coarser than in *alata* but not crenate as in *Scorodonia*. Panicle more diffuse (bushy) than in *Scorodonia* and resembling *alata*. Staminode reniform, but less deeply indented than in *alata*, and not gland-edged like the entire staminode of *Scorodonia*. Fruit very freely produced, but much smaller than that of either of the putative species, many fruits sterile and probably all, or nearly all, so. As the distribution of the two plants does not overlap there is little probability of the hybrid being found wild in Britain. G. C. DRUCE.

535/4. S. NODOSA L., var. TRACHELIOIDES Dr. & Wade. A singularly graceful plant with the leaves of about the same size and outline of those of *Campanula Trachelium*. Found by Mr A. E. WADE at Cwm Llwch, Brecon, in 1926. G. C. DRUCE.

543/8. VERONICA ANAGALLIS-AQUATICA L. The true plant is represented in my Herbarium from Jersey, J. PIQUET; Braunton Burrows, N. Devon, DRUCE; Petches Bridge, H. E. FOX; Finchingfield, N. Essex, Canon VAUGHAN; Hitchin, J. E. LITTLE; Marsworth, Herts, DRUCE; Cothill, Hampstead Norris, etc., Berks; Wendlebury, etc., Oxon; Marsworth, etc., Bucks, DRUCE; Bures, W. Suffolk, G. C. BROWN; Hagbrook, Warwick, Miss C. E. PALMER; Sibstone, Leicester, MITCHISON; Coron, Anglesey; Langton Lees, Berwick; Dunrossness, Virkie, etc., Zetland; Galway, DRUCE.

Var. DIVARICATA (Krösche as sub-sp.) C. E. Britton *in litt*. Dovedale, Staffs and Derby, 1926 (correct record of *aquatica*); Rescobie, Forfar, 1912; Kishorn, W. Ross, 1893, DRUCE.

Var. AMBIGUA (Krösche as sub-sp.) C. E. Britton *in litt*. Hambledon, S. Hants; Aston Common, Binsey, Pool Bottom, Oxon; Eddlesborough, Bucks and Beds, DRUCE; Lathdale, Derby, E. & H. DRABBLE; Southport Dunes, Lancashire, DRUCE; Gogar, Edinburgh, BELL; Ayrshire coast, H. E. FOX; North Berwick, Haddington; between Kirkinner and Wigtown, DRUCE.

Var. ULVACEA Hausm. Kilsby, Northants; Marston, Oxon, DRUCE. A submerged state rather than a true variety.

543/9. V. AQUATICA Bernh. Mr Britton identifies as this specimens from Sausmarez, Jersey, DRUCE; Odiham, N. Hants, Miss C. E. PALMER; Eastwear Bay, E. Kent, LOYDELL; Pyrford, Surrey; North Stoke, Sussex; Chalvey, Cothill, Hinksey, etc., Berks; Ambrosden, Binsey, Hazeley, etc., Oxon, DRUCE; Sutton, Cambridge; Warley, Hunts, FRYER (as *scutellata*); Claverdon, Warwick, Miss C. E. PALMER; Oundle, Eye, Northants; Edinburgh, DRUCE. The Ambrosden specimens are forma *laticarpa* Krösche.

543/18. V. TOURNEFORTII Gmel. type. (PERSICA.) Penzance, Cornwall; Wool, Dorset; Par, Newport, STRATTON; Totland Bay, Isle of Wight, H. E. Fox; Limpsfield, Surrey, H. E. Fox; Claygate, Surrey, H. C. Watson; Mere, S. Wilts, C. Bailey; Ailsworth, Northants, Druce; Gt. Marlow, Bucks; Cornbury, etc., Oxon, Druce; Barkythorpe, Leicester, A. R. Horwood; Chatteris, Cambs, 1883, Fryer; Hertford, 1847, Ansell; Lidbrooke, ? Herts, 1850, Purchas; Barmouth, Merioneth, 1882, Pamplin; Tenby, Pembroke; St Anne's-on-Sea, W. Lancs, Bailey (approaches *Corrensiana*); Seaton Carew (as *polita*), M. A. Lawson; Durham; Edinburgh, 1840, Skene; Ullapool, Loch Maree, W. Ross, Druce.

Var. Aschersoniana (Lehm.). Folkestone, Kent, 1901, Loydell; Alton, Hants, 1887, Vaughan; near Bluntisham, Hunts, 1899, Fryer; Fleam Dyke, Cambridge, 1865, H. E. Fox; Hayes, Middlesex, 1897, Loydell; Hindhead, Surrey, 1905, Bailey; near Penrith, Cumberland, 1892, Bailey; Mt. Stewart, Wigtown, 1899, Bailey; Stonehaven, Kincardine, 1891, Bailey; Buncrana, Donegal, 1897, H. E. Fox.

Var. Kochiana (Godr.). Bletchingdon, Oxon, 1901; Greenham, Berks, 1895 (named by Linton *agrestis*), Druce.

Var. Corrensiana (Lehm.). Odiham, N. Hants, 1873, Miss C. E. Palmer (as *grandiflora*); Kingsdown, Kent, 1915, H. E. Fox; near Clydach, Brecon, 1897, Bailey; Burntisland, Fife, 1858, Bell; Rockcliff, Rough Firth, Kirkcudbright, 1899, Bailey; Balta Sound, Zetland, Druce.

543 19. V. agrestis L. Saltash, Cornwall (as *polita*); Alton, N. Hants, Vaughan.

Var. Garkiana P. Fournier. St Saviour, Guernsey, 1906, Druce; East Acton, Middlesex, A. Loydell; Hilbrook, Suffolk, 1885, H. E. Fox; Flowerdale, W. Ross, 1926, Druce.

Var. versicolor Mathieu Fl. Belg. i. 391. Strath Carron, Ullapool, W. Ross; Banbury, Oxon; Drumore, Wigtown, 1909, Druce.

543/20. V. didyma Tenore, var. Thellungiana (Lehm.). Totland, Isle of Wight, Stratton (as *agrestis*); St Saviour, Jersey, 1853, J. Piquet; St Agnes, Cornwall, Rilstone; Odiham, N. Hants, Miss C. E. Palmer (as *agrestis*); Botanic Gardens and Iffley, Oxford, 1871, H. E. Fox (as *agrestis*); Headington, etc., Oxon; Welwyn, Herts, 1820, W. Blake (as *agrestis*); Kilsby, Northants, L. Cumming; Cornbury Park, Oxford, etc., Oxon, Druce; Shirley, Derby, 1907, W. R. Linton (as *grandiflora*); Brackley, Northants, Druce; Beardsall, Derby, 1845, Ansell; Buttersby, Durham, Fox (as *agrestis*); Stromness [2854], Orkney, H. H. Johnston.

Mr C. E. Britton has determined the above from specimens in the editor's herbarium. See his paper on these new forms.

If the collaborator with Dr A. Thellung of the Veronicas is identical with Dr E. Lehmann who some years ago, when he was in the Isle of Wight, borrowed the set of Billot's Veronicas from the late Mr F. Stratton (and which now belong to me)—54 sheets in all—would he kindly let me have them, as my set of Billot's Exsiccata is rendered much less valuable owing to the Veronicas being missing. Numerous applications for their return were sent to Kiel, but the letters presumably went astray, as I received no reply.

543/39. V. SALICIFOLIA Forst. f. = HEBE SALICIFOLIA (Forst.). Alien, Australia. Hortal. On waste ground, Galashiels, Selkirk, August 1926, G. C. DRUCE and I. M. HAYWARD.

545. EUPHRASIA, nova species. Growing at about 2500 feet in tufts of *Grimmia patens* and *Hypnum cupressiforme*, Glen Fiagh, Angus, 1926, G. C. DRUCE. Its nearest ally seems to be *foulaensis*.

558/2. MENTHA ALOPECUROIDES × ROTUNDIFOLIA. St Lawrence Valley, Jersey, J. PIQUET. Det. J. FRASER.

558/4. M. SPICATA L., var. CILIATA Dr. The var. γ of Smith's *viridis*. Differs from type in the leaves, bracts, and calyx being hairier, the latter being very strongly ciliate. Bayswater Mill, Freeland, Oxon, 1904, G. C. DRUCE.

558/7. M. AQUATICA L. (HIRSUTA) × PIPERITA = × M. FRASERI Dr. With varying degrees of hairiness on the leaves, which are less elegant in shape than *piperita*. Probably it is a hybrid of the above parentage. Boat of Garten, Easterness; Tongue, Sutherland; Alford, N. Aberdeen; Drum, S. Aberdeen, G. C. DRUCE.

572/1. SCUTELLARIA GALERICULATA L., var. LITTORALIS Dr. This varies in the amount of hairiness. Damp places in Kenfig dunes, and at Whiteford Point, Glamorgan; Tarbert, Argyll; Wigtown; Kishorn, Jeantown, W. Ross, G. C. DRUCE; Loch Ness side, Inverness, C. E. PALMER.

Var. PUBESCENS Mutel. Laugharne, Carmarthen, D. HAMER; Silverdale, S. Lancs, G. ADAIR; Newhaven bog, Northumberland, H. E. FOX.

Var. LEIOSEPALA Dr. in Fl. Berks. 402, 1897. Apparently rare in Britain. The wholly glabrous plant (save the corolla), var. *vulgaris* Mutel, does not appear to occur in Britain. Bins Pond, Shortheath, Selborne, Hants, Canon VAUGHAN; Stockleigh Pomeroy, Devon, Miss LIGHTFOOT; Swainsthorpe, Norfolk, G. C. DRUCE.

577/13. STACHYS OFFICINALIS Trevis, var. HIRTA Rouy Fl. Fr. vi., 305. *Betonica hirta* Leysser Fl. Hal. 109. See Reichb. Ic. 81, f. 952. *Betonica offinicalis* L., var. *hirta* Koch Syn. Fl. Germ. 569, 1837. Babington (*Man.* 251, 1847, and 333, 1904) says "calyx nearly glabrous." Syme (*Eng. Bot.* vii., 54, t. 1067) writes of *Stachys Betonica* "calyx glabrous or sub-glabrous except at the throat," and Leighton (*Fl. Salop.* 287, 1841), describing the Shropshire plant, says "very slightly hairy." Babington writing to Leighton says:—"Your *B. officinalis* seems to belong to the true plant; it agrees with Reichb. *Icon.* viii., 952, and the specimen in his *Fl. Exsicc.*, n. 990, with the exception of the few hairs which exist on the outer part of the upper portion of the calyx. In *B. hirta* I learn from his figure and specimen that the calyx is much more hairy and the teeth much shorter. *Eng. Bot.*, fig. t. 1142, appears to belong to the true *B. officinalis* L." It may be well to call to mind that the plate, t. 1067, in Syme's *Eng. Bot.* is redrawn. Other British authors make no mention of the calyx clothing. Recently Miss Vachell, with her customary critical examination of plants, drew my attention to a form which occurs on the Glamorganshire cliffs near Nash Point, which is itself more hairy and has the calyx covered with bristly hairs. Under her guidance I visited the place in November when the plants were practically over but 2 or 3 specimens were seen which had the hairy calyx. On looking through my herbarium I found that some plants which I gathered on the Lizard Downs also had this character, and I refer these and the Glamorgan plant to this variety. The common British plant is var. *glabratus* Rouy. The small plant, var. *nana* Dr., from the Cornish cliffs, keeps constant in culture. G. C. Druce.

584/2. Phlomis samia L. Alien, Greece. Knocknamonagh, above the Old Port, Letterkenny, Donegal, F. R. Browning.

594/1. Corrigiola littoralis L., nov. forma or var. rubescens Dr. Miss Cartwright has kindly sent me two forms of this rarity from Slapton Sands, one the natural green foliaged plant, the other with red and more succulent stems and sepals crimson tipped, to which I give the above name. The two forms grew together, *rubescens* being the more vigorous of the two. Miss Larter also observed the difference in the two forms, and I am indebted to the two observers for their notes and specimens. G. C. Druce.

596/6. Amaranthus retroflexus L., Peculiar Varieties of. J. H. Schaffner in *Ohio Journ. Science* 469, 1915. Four examples are figured, the type being a uniform green, 1 B has large red, oval or ovate spots of anthocyanin on the leaf-blades. 1 C has a silvery curved band a little beyond the middle. This character is transmitted by seed. 1 D has the silvery band and a red spot on each side of it and this, too, is a hereditary character. "They appear," says the writer, "to represent different mutations which develop without the influence of a determining environment and without the accumulative effect of a purposeful selection.

600/1. Chenopodium rubrum L., var. nov. Kochiiforme Murr. Ramis plurimis, teneris, foliis omnibus praesertim ramosum valde angustis. Bedminster, Bristol, N. & C. Sandwith. Chenopodio (glauca sub-sp.) Wolfii Simonk. parallelum sed originis recentioris sic systematici minus consoliditam. J. Murr.

600/8. C. subficifolium Murr, forma microphyllum Murr. In plenty near the railway at Didcot, Berkshire. Distributed this year. G. C. Druce.

606/5. Atriplex hastata L., forma microphylla-serratodentata Murr. Holy Island [33700], G. C. Druce.

606/15. A. (*c.f.*) Muelleri Benth. Alien, Australia. Dagenham, Essex [2612], R. Melville. Det., tentatively, A. Thellung.

615/28. Polygonum amplexicaule Don. Bridgend, Ramelton, Donegal, F. R. Browning.

Var. oxyphyllum Don. Copses, Fortstewart, Donegal, F. R. Browning.

615/34. P. compactum Hook. f. Bot. Mag. t. 6476. Alien, Japan. Doherty's Sprackburn, Letterkenny, Donegal, F. R. Browning.

618/16. Rumex Acetosella L. Contains 1.36 per cent. of potassium binoxylate. Isabella A. Purdie in *Ph. Journ.* 105, 1927.

621/1. Asarum europaeum L. Contribution à l'Etude de l'*Asarum europaeum* by L. Leemann in Bull. Soc. Bot. Genève, vol. xix., fasc. 1, 92-173, 1927. The plant was first mentioned by Dioscorides. Its vernacular names are given as well as its pharmaceutical uses, its active principle (asarine), and its geographical distribution. It is said to be totally absent from Scotland but there is a fine colony on the west bank of the Tay below Perth, but probably it is not truly native there. It occurs in Denmark and in many parts of Russia. Illustrations are given which include those of the secretive cells in the rhizome. It is a remarkably able and comprehensive study of this very interesting species.

626/1. Viscum album L. On *Pyrus japonica*, Okehampton, Devon, Miss Burd in *Dev. Trans.* 124, 1926.

632/1. Mercurialis perennis L., var. Salisburyana S. K. Mukerji in Journ. Bot. 56, 1927. The leaves are much more deeply serrate than in the type. Staplehurst, Kent. Plants which must be near to this are from Arthog Woods, Merioneth, W. C. Barton, and Lighthorne, Warwick, C. E. Palmer in *Hb. Druce.*

633/5. Ulmus campestris. Mr John Caldwell (*Nature* ii., 513, 1927) figures a "natural graft" which was disclosed in a tree blown down at Craig's House, Corstorphine. It appears that the tree, while still young, had for some reason forked equally. "Something had caused the two forks to anastomose, and the subsequent growth of the tree had enabled the cambial activity to form a solid xylem cylinder round the portion of the two forks which had not fused together."

669/1. Orchis purpurea Huds., nov. var. pseudo-militaris Dr. Dover, Kent, 1879, Eyre de Crespigny; Cobham, Kent, 1883, Dr Ward; Wye, H. Walker; Canterbury, Kent, Bishop Mitchison; Maidstone, Kent, 1885, in *Hb. Druce.* This is repeatedly mistaken for *O. militaris* or *O. Simia* from which it widely differs in essential characters. It is a variant of *O. purpurea*, a variable species. Camus (*Icon. Orchid.* t. 28) names and figures f. *longidentata* (of this he gives two examples, differing more widely from each other than they do from other named forms), *expansa*, *breviloba*, *convergens*, *spathulata*, *latiloba*, *minima*, *amediastina*, *incisiloba*, *parallela*, *confusa*, *rotundata*, *longimediastina* and *albida*, but none of them precisely match any Kentish form in my herbarium, the nearest being *longidentata* from Bexley Wood, *expansa* (similar outline but smaller size) from the Quenvais, Jersey, and a plant from Wye gathered by me in 1923 which is very near *rotundiloba*. Var. PSEUDO-MILITARIS is a plant with smaller flowers and much narrower divisions of the labellum. In the fresh state there is no difficulty in referring it to *purpurea* by those who know the two species, the colouring of the helmet often being a good distinguishing feature, but the book characters often mislead collectors. *O. militaris* has leaves which are narrower in proportion to their length, the helmet is never tinged with dark purple, and is more acuminate. In *pseudo-militaris*, although the segments are sometimes narrower, or as narrow, they have different range of colouring and cutting from those of *militaris*, while the broader leaves and dark purple colouring of the helmet are also good differentiating characters. Great indebtedness is due to Mr H. Walker who has frequently sent me varying forms, including good albinos—var. *albida* Camus. G. C. DRUCE.

669/5. O. MORIO L. A specimen collected by WM. ANSON in Sussex carried 12 flowers, each abnormal. It was entirely barren and the flowers were doubled. See *Journ. Hort. Soc.* xxxvi., January 1, 1927.

669/10. O. MACULATA L., etc. L'Autogamie chez l'Orchis, et chez quelques autres Orchidées, P. MARTENS in Bull. Soc. Bot. Belg. 59-69, 1926. Treats of *O. latifolia*, *O. Morio*, *O. maculata*, and *Ophrys apifera*. We are left in doubt as to what the actual segregate species are which are described under the above names. The same Bulletin contains a preliminary note on the variation in Belgian Orchids. It suggests that at present the author is not well read in the recent history so far as Britain is concerned. He asks if *O. praetermissa* (among others) is genetic. The answer is yes, and for two generations.

669. O. FOLIOSA × MACULATA. Figured in *Gard. Chron.* 431, 1927, from the Rock Garden at Kew. See *Rep. B.E.C.* 53, 1917.

685/1. GALANTHUS NIVALIS L. An account of the seedlings, with illustrations, of the Snowdrop is given in *Gard. Chorn.* ii., 7, 1927, by MR MURRAY THOMSON.

706/3. SCILLA NON-SCRIPTA L. & H., var. BRACTEATA Dr., f. STUARTIAE Dr. The plant so named by Dr Druce (*Rep. B.E.C.* 49, 1920) was first observed by me in the spring of 1917. At that time I saw two flowering spikes. These were in bud when I first noticed them and

I supposed their curious appearance to be due to malformation. Going later to the place I found they had developed into perfect specimens of unusual character. Since that time I have had opportunity to visit the spot most seasons at flowering time and have found a constant increase in the number of plants. Last May (1927) there were between thirty and forty flower spikes. These were all in fairly close proximity to the site of the original plants. The coppice where these bluebells grow has always been a "bluebell wood." I have known it for a great number of years and have been in it often at flowering time in past years. The bluebells there grow very tall, with stout, thick stalks. There are always some with white flowers, and some lilac in colour in this coppice. I have shown specimens of f. *Stuartiae* to people who are familiar with the neighbourhood and who are, or have been, frequenters of this, and other bluebell woods in the district. So far I have found no one who has ever seen this curious and beautiful variety till now. Worcestershire hop-yards and cherry-orchards are in the immediate surroundings. The earth is of the rich red quality which marks the Teme valley, and is the home of f. *Stuartiae*. BEATRICE STUART.

717/3. COMMELINA NUDIFLORA L. Alien, Tropics. Hackney rubbish heaps, Middlesex, R. MELVILLE.

717(2). ZEBRINA Schnizl. in Bot. Zeit. vii., 870, 1849.

717(2)/1. ZEBRINA PENDULA Schnizl., *l.c.*, var. VIRIDIS. Alien. Mexico. Hortal. In the crevices of a wall, St Heliers, Jersey, May 20, 1926, L. ARSENE. Name assented to by Kew.

721/1. TYPHA LATIFOLIA L. Chromosomes 15 in pure species. *T. angustifolia*, with which it readily hybridises, reveals abnormalities characteristic of hybridity -irregular chromosome distribution and pollen sterility. ROSCOE in *Bot. Gaz.* 405, 1927. Was the *T. angustifolia* used a pure strain is the question that arises?

722/1. SPARGANIUM ERECTUM L.

S. RAMOSUM (Huds.). Root leaves triquetrous in their lower portion and furrowed; with a deep channel upon the upper side, which disappears in the upper portion of the leaf, which is quite flat and very faintly striate on the upper side, but keeled throughout its whole length beneath, and like the upper side faintly striate. Stem leaves and bracts similar but the latter much smaller. Base of root leaves and of flowering stem coloured pinkish-purple.

b. NEGLECTUM (Beeby). Root leaves triquetrous in their lower portion; less furrowed than in *ramosum*, keeled and faintly striate on under side throughout their length and with deep central and shallow lateral grooves on the upper surface; the grooves are not apparent in the upper portion of the leaf. Stem leaves and bracts similar but the latter much smaller. Base of root leaves and of flowering stem coloured as in *ramosum*.

c. MICROCARPUM (Neum.). Root leaves convex at base with a very slightly developed keel; remarkably thick and spongy in texture; strongly and broadly furrowed on under side, the furrows changing gradually to faint striations in the upper portion of the leaf. Upper surface of leaf broadly striate in its lower portion with a shallow but distinct central groove, this groove disappearing in the upper portion of the leaf; the leaves about half as broad again as those of *neglectum* and *ramosum* and narrowing much less gradually to the tip than in their case. Stem leaves and bracts more strongly furrowed than those of the above named plants. Base of root leaves and of flowering stem nearly white. Foliage a darker green than that of either *ramosum* or *neglectum*. W. W. BOUCHIER and R. F. TOWNDROW.

741/1. NAIAS MARINA in its somatic cells shows 12 or sometimes 14 chromosomes owing to the smallest two pairs being more or less united. *Vallisneria spiralis* has 20 chromosomes.

758/2. SPARTINA STRICTA (Ait.) Roth. M. L. Fernald (*Rhodora* 117, August 1916) suggests that the oldest name for this grass is *Dactylis maritima* Curtis Enum. Br. Gr. 1787, and that *Spartina maritima* (Curt.) Fernald *l.c.* is the correct combination.

758/3. S. TOWNSENDII Groves. It is rare to find any part of the surface of the earth which does not support some kind of vegetable growth. The sea has its algae and the land its plants, but the debatable land between the two has hitherto been barren. All round our coasts, in the bays and estuaries, stretch large areas of mud-flats covered twice a day by the salt tide, and barren of vegetation. Nature hitherto has failed in temperate climate to produce a plant which could obtain a foothold under the conditions of alternate salt wet and dry. In tropical countries we have the various varieties of mangroves, but they will not stand our climate. Now, however, a new hybrid plant has naturally developed which fills the gap. It plants its roots firmly in the mud and cares nothing for the salt tide covering it so long as it is not too deep. It does more—it naturally warps up the mud by entangling the particles in the roots and gradually raises the surface until it is on a level nearly as high as that of the tide. Forty years ago the mud-flats behind Hurst Castle in the Solent and about Lymington were bare and treacherous, a resort for shore birds and wildfowl. Now for many miles they look like dull coloured fields on which one can walk with safety if not with comfort. It is an astonishing effect to have been caused by a small plant, SPARTINA TOWNSENDII. The rounded outlines of the mud have been levelled up for miles, the sides of the runnels get gradually steeper and steeper till the whole of the mud resembles nothing so much as a vast flat meadow. The feeding value of this grass is probably insignificant, but there are other possibilities. Now that the land has become naturally warped up it could be reclaimed by running a bank round it, with sluices through it, allowing egress but not inlet of water. Then when the land had dried itself sufficiently it could be ploughed up and planted with succulent grasses. There are probably many hundreds of square miles of mud round the coast which could be reclaimed in this way. There are upwards of 150 in the Solway alone. The plant appears to be extremely vigorous. It grows to about a foot in height. It can be had in any quantity by anyone who chooses to take it from the edge of the sea in the localities named, behind the shingle bank at Hurst Castle, Hampshire. Man does not want mud-flats. They produce nothing useful to him, bar a stray bird. Man wants land with sharp edges and deep water alongside. This plant seems to have become naturally adapted to produce just these conditions. All that is now wanted is to get it known and distributed round our coasts in suitable localities where its economical value in producing new land may prove to be incalculable. Col. H. de H. Haig. *S. Townsendii* Groves is figured in *Bot. Mag.*, t. 9192, 1927.

777/1. **Phleum pratense** L. The Life History of Timothy. U.S. Dept. of Agric. Bulletin, Washington, n. 1450, March 27, 1927. Mr Morgan W. Evans, under the above title, which has nothing to do with the New Testament, gives in 55 pages a mass of most useful information about the grass. Of the bortal species of the genus only *P. alpinum* is native in North America, but Timothy is one of the grasses most largely grown there. Over ten million acres are under it, and nearly twenty million more are occupied jointly by it and clover. The time of flowering and its growth are given in great detail, and excellent illustrations are copiously interspersed. Mr Evans gives the term "haplocorm" to the thickened, swollen internode, and says that it has had various cognomens—corm, tuber, or bulb, but as none of these strictly applies he uses the above. He does not consider it to be of systematic importance. The length of the spikelets varies greatly—from 0.4 to 11.2 inches. The fields of Timothy are not exactly the place for a hay-fever victim to visit. It was observed that as the wind passed over a Timothy meadow approximately half-a-mile away the clouds of pollen appeared as a haze over the field. Several instances of proliferation are figured and the conditions which induce it are given. This proliferation is distinct from vivipary in which the seed germinates while attached to the parent plant. Ramose branches rarely occur. In nature in the States Timothy seeds mature, fall to the ground, and a large proportion of them germinate during the late summer months. A shoot originating from a seed which germinates in the later summer continues its growth until the following season. If an inflorescence develops on it, seeds will mature in midsummer and in a short time (2-10 weeks) the shoot becomes entirely dry about one year or a little more than a year after it began its growth. This excellent pamphlet treats of Timothy from an agricultural point of view, and no notice is taken of named varieties or forms. It seems probable that the Timothy of the States, of which he is writing, is like the Scottish Timothy, namely, *T. intermedium* Jord., in which "haplocorms" are normally present.

In Britain the grass is much more prone to variation, and experiments are needed in order to prove that the normal fibrous rooted *P. pratense* ever yields "haplocorms."

777/1. P. PRATENSE L., forma MONSTROSA. Found by Mr JUSTICE TALBOT near Edenbridge, Kent. An extraordinary plant in which subtending the panicle were three tufts of leaves. Each of these tufts seemed capable of producing separate plants.

782(2). TRIPLACHNE Link Hort. Berol. ii., 241, 1833.

782(2)/1. TRIPLACHNE NITENS Link. Alien, Mediterranean, Sicily. Par Harbour, Cornwall, L. T. MEDLIN.

819/1. DACTYLIS GLOMERATA L. Mr J. Griffiths Davies in *Nature* 237, 1927. The chromosome number is clearly established as being 28 in the diploid somatic nucleus of the root-tip and 14 in the haploid nucleus. Mr Griffiths refers to the chromosome number of *Arrhenatherum* as in the neighbourhood of 40. Unfortunately he uses the name *A. avenaceum*, but describes it as with swollen basal internodes. This, of course, refers to *A. tuberosum* Gilib., which has been shown to be specifically distinct and remains true in varied test cultures.

822/1. BRIZA MEDIA L., nov. var. NANA. Plants reduced to one inch high bearing a solitary 4-6 flowered spikelet. At 750 ft. on the chalk near Heysholt and Graffham, Sussex. Sent by COLIN TRAPNELL.

825/8. GLYCERIA PROCUMBENS Dum., nov. var. ERECTA. In a swampy place at Cardiff Docks, Glamorgan. Plants erect, 18 in. to 2 ft. high. G. C. DRUCE and Members of the Botanical Excursion, June 1927.

826/9. FESTUCA OVINA L., var. SULCATA (Hackel as sub-sp. in Mon. 100, 1882). *F. duriuscula* Host non L. Race *F. sulcata* Hack. Rouy (*Fl. Fr.* xiv., 211) groups it as a race under his sub-sp. *F. valesiaca* Schleich. It is a stiff, rigid grass with somewhat glaucescent foliage; leaves short, flat; panicles close; spikelets large, awned. Near Byfleet, Surrey, G. C. DRUCE.

827/4. BROMUS TECTORUM L., var. GLABRATUS Spenn. Glasgow Coup, Lanark (?), R. GRIERSON, ex J. R. LEE.

827/27. B. SQUARROSUS L., var. VILLOSUS (Suter) Koch. Mitcham, Surrey, 1867, H. E. FOX, as *patulis*. Det. A. THELLUNG.

830/4. AGROPYRON REPENS Beauv. This is treated of under the title, The Seeds of Quack Grass and Certain Wheat Grasses Compared, in a pamphlet by Helen H. Henry in Journ. Agric. Research (35, n. 6), Washington, U.S.A. A very complete account of the fruits of this and its allies, with many figures, is supplied in the memoir. The other American species involved are *A. Smithii* and *A. tenerum*. These fruits can, by the aid of the information contained, be readily identified, and Miss Henry says that the shape of the rachilla and the width of the opening between the edges of the lemma at the base of the rachilla segment are valuable diagnostic characters.

832. TRITICUM. Wheat. Our member, Prof. Percival (*Nature* 280, 1926), has identified some specimens of wheat found by Prof. Langdon of Oxford in a vase on the site of an ancient Sumerian house near Kish in Mesopotamia, of a date about 3500 B.C. He identifies them as *T. turgidum*, a wheat apparently unknown to the ancient Egyptians. He gives illustrations of the modern Rivet for comparison, but the lettering of figure 1 is wrong. It should read the upper row (of the 2 lower) is Sumerian, the lower grains are of Rivet Wheat and their close resemblance is unmistakable. It may be said here that Einkorns, *Triticum monococcum*, has 7; Emmers, *T. dicoccum*, 14; and Bread wheat, *T. vulgare*, 21 chromosomes.

835. HORDEUM sp. Prof. Netolitzky has shown (*Die Umschau* 45, 1911) that Barley was the staple food of the early Egyptians as at Naga ed Der in Upper Egypt over 60 centuries ago. The earliest example of *Triticum dicoccum* appears to be that found by Borchardi in the temple of King Sahure of the fifth dynasty, but it is probable that it was used before that date, as Dr Elliot Smith (*Nature* 82, 1927) says that civilisation first began in the Nile Valley, and it may be that Barley grew wild there before man first made his way into that strip of land.

836/7. ELYMUS VIRGINICUS L. Alien, N. America. Rubbish heaps, Iver, Bucks; Dagenham, Middlesex, R. MELVILLE.

839/1. JUNIPERUS COMMUNIS L. Mr F. R. S. Balfour (*Trans. Royal Scot. Arbor. Soc.*, 1926) says the Juniper which in Norway grows to a tree 30 ft. high is found very useful for fencing work as it is very durable. A fence erected 100 years ago is still perfectly serviceable.

840/1. TAXUS BACCATA L. The Hon. Vicary Gibbs (*Journ. Hort. Soc.* 253, 1927) says that Mr Fletcher of Aldwich Manor, Sussex, has found several fastigiate yews covered with male flowers, so that the Florence Court is not necessarily the source or that it, or its progeny, are always female.

865/4. BOTRYCHIUM MATRICARIAE (Schrank) Sprengel Syst. iv., 23, 1827. *B. rutaceum* Swartz non Willd. *B. Matricarioides* Willd. *Osmunda Matricariae* Schrank Baier. Fl. ii., 419, 1789. Rep. B.E.C. vii., 998; viii. 212, 1926, cum icon. t. ii. Another protracted search in Strachan in 1927 proved a disappointment, although this time much more definite information regarding the locality had been obtained. Fortunately its finder, T. R. Sim, is still living in Natal, where his early promise as a systematist has matured and his work at botany and forestry has been rewarded by his being made a D.Sc. His publications on Botany, including Bryology and Forestry, have been most useful. In answer to my inquiries he wrote to me in June 1927, saying, "It is interesting to hear from you after so many years, or perhaps

I am corresponding with a son of my former correspondent. I used to be a member of the B.E.C. many years ago, mostly before 1876, for in that year I went to London, though I returned annually or almost annually to Scotland up till 1888. In Strachan I lived in a particularly favoured locality for rare plants. I well remember collecting the *Botrychium* you refer to, though which year or month I could not now say, but I think it was May or June" [It was July]. He then gives me the exact locality, which is perfectly well defined. "*B. Lunaria* grew there also, and I thought at the time it was simply a sport such as we have in abundance in [the Filices] but I may have been wrong. . . My father, who was also interested in plants, farmed in Strachan from 1866 for 19 years." Armed with this precise direction I diligently searched the spot, but in the course of years doubtless the roadside grass-covered bank has altered in character, and there was no trace of either species of *Botrychium*. Neither did the surrounding country afford it, nor was my offer of a sovereign to the school children and the interest of their efficient teacher productive. By a bit of good luck the two sisters of Dr T. R. Sim were staying in the village. I called on them, and they both remembered the Moonwort and its locality and, without prompting, directed me to the very place I had so closely scrutinised. Miss Sim showed me a painting she had made of the *Lunaria*, but Mrs Whyte, her married sister, told me she had collected specimens, which she believed she had at her home in Glasgow and promised to send them to me. In September she sent a sheet of plants which, she says, her father collected in 1872. "My book," she says, "is dated 1879." One of the specimens on the sheet was *Lunaria*, but two were *Matricariae* and more complete examples than that in the herbarium of Rev. Prebendary H. E. Fox, now in my collection. They removed the slight doubt I had about the identification as the barren fronds spring from the base of the stems. I then wrote to enquire if she was aware of her father ever receiving foreign specimens in exchange. On September 24 she wrote, "I do not remember either my father or brother having got any such specimens from abroad, and I do not think it likely as my father's exchange of specimens was confined entirely to that of Mosses, and my brother was very little at home after he went to Kent. My sister, who is two years my junior, remembers things of long ago much better than I do, and she remembers seeing it growing at Inverey. She knew it was a rare plant, and we were not allowed to pick it. I expect, therefore, I got a specimen from my father. I am sending the specimen to my brother. . . . He will be very interested, as he devotes all his time now to Botany." We may, therefore, I think, safely conclude that *Botrychium Matricariae* actually occurred in Kincardineshire. It is remarkable that after 50 years one has been able to get such contemporaneous testimony to its occurrence in Strachan, and almost more remarkable is the fact that for over 50 years the specimen lay perdu in the herbarium of my lamented friend without being recognised. Hitherto I have been unable to find other examples in other herbaria, but it is not unlikely that some still exist. G. C. DRUCE.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1927.

(Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.)

AMERICAN JOURNAL OF BOTANY, vol. xiv., 1927. Studies in *Saxifraga*, A. M. JOHNSON, p. 323. The Asian *S. punctata* is contrasted with the American *S. arguta* Don. A new sub-section, Radioflorae, is suggested for the Japanese *S. fusca* Maxim. Cytology of a Tetraploid Wheat Hybrid, *Spelta* × *monococcum*, M. C. Milburn and W. P. Thompson, p. 328. The chromosome number of Einkorn is 7, of Emmer 14, and of Spelt 21. This hybrid has a more vigorous growth than its parents, but is completely sterile.

ARSENE, LOUIS. Contribution to the Flora of the Islands of St Pierre and Miquelon. Rhodora 29, 117, 1927. These islands are situated in the Archipelago near Newfoundland. Bro. Arsène gives the botanical history of the islands and the results of his own work in them from 1899 to 1903, which resulted in his gathering 454 species. He has deposited 430 species in the Gray Herbarium at Harvard. His general list numbers 487 species, of which 96 are introduced. The genus, *Carex*, is the most striking of the paludal flora, having 42 species in all. There are 24 species of Orchids which make gay the dreary bogs and barrens. Only 15 species of Compositae have been noted. The Phytogeography is well treated, and there is a great mass of most interesting information about these little-known islands.

ASCHERSON, PAUL, and P. GRAEBNER. SYNOPSIS DER MITTEL-EUROPAISCHEN FLORA. Ranales, contd. 1926.

BEAUVERD, G. Polymorphism of *Listera ovata* with new names and combinations. Bull. Bot. Soc. Genève 338, 1925 [1926].

BEIHEFTE ZUM BOTANISCHEN CENTRALBLATT, C. Heinrich. Dresden. Vegetation und Flora des Talysh-Gebiete, A. A. Grossheim, Tiflis. Band 43, heft i, 1926. Sciaphilous Plant Types, Theo Holm, *l.c.* January 1927. The material is from Maryland, Virginia, Porto Rico, etc. Included in this group are *Asarum canadense*, *Panax* and *Hydrastis*. Ample leaf blades are one of the most characteristic features of sciaphilous plants, but it is not a feature of our *Potentilla erecta* var. *sciaphila*. H. Handel-Mazzetti (July 1927) gives a systematic monograph of *Leontopodium* with new species. Forty-one species are described in an able manner. A. A. Grossheim (October 1927) contributes Iter Persicum Primum, which includes several new species of *Astragalus*, *Lamium* and *Nepeta*.

BEMROSE, G. J. V. The Adventive Flora of Leicester and District. Trans. Leic. Lit. and Phil. Soc., February 6. 1927. The introductory part gives some interesting details respecting the previous workers at the Leicester Flora. It is possible that the Herbarium of Mrs Foord Kelcey might contain some material, and there are many plants, not necessarily adventive, in my herbarium from Bishop Mitchison, who lived for some years in Leicester. A few others are to be found in the herbarium of Mr Linnaeus Cumming, recently presented to Rugby School. The present list numbers nearly 300 names. The many hours spent in identifying Mr Bemrose's specimens receive no acknowledgment. *Papaver Argemone* L. (not *Papava* as printed), *P. Lecoqii* and *Rhoeas*, *Fumaria officinalis*, *Brassica arvensis*, *Reseda luteola*, *Arenaria leptoclados*, *Geranium lucidum*, *Trifolium striatum*, *Caucalis arvensis*, *Sherardia arvensis*, *Valerianella olitoria*, *Chrysanthemum segetum*, *Cichorium*, *Anagallis arvensis*, *Centaurium*, *Cynoglossum officinale*, *Echium vulgare*, *Lithospermum arvense*, *Lycopus*, *Linaria spuria*, *L. Elatine*, *L. minor*, *Lamium amplexicaule*, *L. hybridum*, *Verbena*, *Stachys arvensis*, *Euphorbia Helioscopia*, *E. exigua*, etc., but if these are included, why not others? Where are the Veronicas? There are many misprints, and the use of capital letters for the specific name is capricious. We congratulate the compiler upon his industry, and one hopes it may be a prelude to a general flora of the county, which is now sadly needed. A map of the area is supplied. Mr Bemrose kindly supplies some other Leicester and Rutland notes. *Polygala serpyllifolia* Hose, Luffenham, Rutland. *Silene noctiflora* with pink flowers, Blaby. *Trifolium ochroleucon* Huds., if correctly named and native, is a new record for Rutland. It is quite likely to be correct as I have found it within a few miles away in Northamptonshire. *Poterium polygamum* is a new alien to the list for Leicester. *Sambucus Ebulus* L., Stockerton, Leicester, has not been recorded for the last 80 years. *Erigeron canadensis* L., Millbank. *Senecio vulgaris = radiatus* Koch and *S. squalidus*, Ratby, Leicester. *Symphytum brachycalyx* Boiss. (Kurdistan), Peatling Parva, and *Silene trinervia* Seb.-Maur. are new to our List. Mr Bemrose also gives *Lathraea Squamaria* L. from Kirby, Northamptonshire. It is a local plant in that county.

Berkeley. The Press of the University of Berkeley, California, continues a commendable output of papers in which Algae occupy a prominent place. The inter-specific hybridisation in *Nicotiana* by R. E. Clausen and T. H. Goodspeed is continued in vol. xi., 1926.

Boccone, Paul. Phytographia. Recently Mr T. Gambier Parry showed me in the Bodleian Library an interesting MS. volume (MS. Ashmole, 1732). It has a written inscription on the inside of the cover as follows:—"Hunc Librum Venetiis dono acceptum ab eximio philosopho Paulo Boccone Qui illum Plantis singulari necdum noto artificio insitis adornavit. Illustrissimae Academiae Oxoniensi D.D. nobilis. vir Carolus Comes Mancestriae Legatus a Gulielmo iii. Nuper ad sereniss. Remp. Venetum. Nunc ad Christianiss. Galliarum Regem A.D. 1699." Probably in Boccone's own handwriting. It is labelled in another hand "Phytographia sive stirpium Illustriorum et minus cognitarum Icones Summâ Diligentiâ elaboratae -By an eminent hand." It contains a large number of figures of plants with a pre-Linnean name. They appear as if they were executed from living plants by blackening the foliage and flowers and thus making an impression. But there were several exact duplicates such as of *Potentilla Anserina*, so that they could not have been prepared from living specimens. It would appear that carefully dried specimens had been glued on to paper, and then covered with a black material. Prints were struck off this as from a wood-block, and the plants having been reblackened could have a second impression made. *Fumaria parviflora* (agg.) was thus treated. The more successful prints were those made from the Labiatae—*Ballota*, *Stachys*, etc., being especially good. *Geum rivale* was also good. It may be remembered that Paul Boccone's "Icones et Descriptiones Rariorum Plantarum" was issued at Oxforde Theatro Sheldoniano in 1674 under the editorship of Robert Morison, who had the MS. of Icones through the Hon. Capt. Charles Hatton, and to him (who was the second son of Lord Hatton and a former pupil of Morison in Paris) Morison dedicated the work.

BOTANICAL GAZETTE, Chicago Press, 1927. Ecology, Plant Geography and Geo-botany: their History and Aim. E. Rubel, p. 428. Logically we have in Geo-botany three great problems of research—space, habitat and change, and two subjects of study—the plant and the plant community. That gives us six branches of our science:—(1) Autochorologic Geo-botany; (2) Autoecologic Geo-botany; (3) Autogenetic Geo-botany (combining the study of the flora); (4) Synchorologic Geo-botany or Chorologic Sociology; (5) Synecologic Geo-botany or Ecologic Sociology; (6) Syngenetic Geo-botany or Genetic Sociology, study of succession (combining with the study of Vegetation or Plant Sociology). Historically plant geography, plant ecology, and geo-botany are synonymous, and include all six branches. Re-vegetation of a denuded Tropical Valley, D. S. Johnson, p. 294. This was near the Blue Mountains in Jamaica when in two days 27 inches of rain fell, practically denuding a large forest area. The re-vegetation is interestingly explained in the above paper. p. 185. F. C. Gates, E. C. Woollett, and E. P. Breaker, on *Spartina Michauxiana*. Nominally a prairie plant, this grass has spread on the shores of Douglas Lake in Michigan. It grows on the upper beach in scattered isolated groups of a few plants or forms elsewhere rather meadow-like zones. It has become somewhat modified in vegetative characters from the prairie plant, and there is the possibility of having a new species in the process of evolution. Its history and methods should be compared with our own *S. Townsendii*.

BOTANISCHES CENTRALBLATT. Band 151, 1927. L. Diels, Berlin; H. Kneip, Berlin; H. Meihe, Berlin; S. V. Simon, Bonn. The botanical abstracts for Britain are absurdly inadequate. The only reference to one's own work is a solitary paragraph under a wrong title, while there are overcrowded references to comparatively insignificant garden items.

BRAUN-BLANQUET, J. Vegetation Entwickelung und Bodenbildung in der Alpinen Stufe der Zentralalpen. Mem. Soc. Helv. des Sci. Nat., Geneva. Pp. 63, 1926; 181-349, 1927. The author publishes an important contribution towards the scientific exploration of the Swiss National Park. A striking fact brought out is the great importance of wind-borne dust. At the upper elevation in the Val Cluoza above the tree limit at an altitude of 2340 metres the dust was collected continuously for two years. The average yearly deposition over the period worked out at about 6½ tons per acre, of which more than a quarter, 1.63 tons, was carbonate of lime. The far reaching results of those experiments will exert a great influence in unravelling some of the problems of plant distribution. One has long felt that the influence of the wind in the transport of seeds has been in the past greatly undervalued.

BRENCHLEY, WINIFRED S. INORGANIC PLANT POISONS AND STIMULANTS. Cambridge University Press Agricultural Monograph. Second edition, pp. 134, 1927; 10/6. "Since the publication of the first edition of this book two of the elements therein dealt with—Manganese and Boron—have come prominently into notice in certain parts of the world, largely for economic reasons, but also because of new discoveries with regard to plant nutrition. This has resulted in considerable activity in research . . . much of which is now incorporated in the book." Miss Brenchley's name is sufficient in itself to recommend the work as her methods have borne the test of trial and earned warm commendations. The whole subject is rather beyond the scope of this Society, but it may be well to state that various comparative cultures have been made. The results are very curious. Thus it was found that peas grown in soil with salts of Strontium, Barium, and Calcium, rejected the Barium. So, too, did many other species, including wheat, maize, lentils, lupins, etc. Copper has long been found as a normal constituent of certain plants, of course in small quantities. Oxide of copper put near the roots of a young poplar soon led to its death. The yearly absorption of it differs considerably in economic plants. That it has a toxic action is proved, but when highly diluted a stimulating action may be manifested. Its extraordinary toxicity on fungus spores is taken advantage of by the farmer who dresses his corn with an aqueous solution and thus practically eradicates *Ustilago*. Zinc, too, has been found in the ash of certain plants. In certain places, as near Aachen, a very high percentage (up to 20) of zinc occurs in the soil, and there forms of *Viola tricolor* and *Thlaspi alpestre* are so strongly influenced as to give rise to varietal or even specific names, e.g. *Thlaspi calaminaria*, the ash of the leaves of which has afforded 13.12 of oxide of zinc. In such a soil many species showed morphological differences and were often deformed, weak and poor. Zinc sulphate acted as a distinct toxic agent in water cultures, especially in the case of barley. Arsenic is absorbed slowly by plants, and has been said by some authors to act as a stimulant. Water cultures at Rothamstead have yielded negative results. Boron, too, has toxic effects but less so than compounds of copper, zinc and arsenic. It also has a distinctly stimulating and favourable influence on plant growth—peas responding more readily than barley to the action of boric acid. In fact, in the Leguminosae, small quantities of boron appear to be essential. Manganese exerts a toxic influence if presented in too great amounts but, as with boron, small quantities appear to cause a very general stimulation of growth. This is an important point considering the frequent presence of manganese deposited on the leaves of plants in or near mining districts.

British Association for the Advancement of Science, August 31-September 7, 1927. President, Sir A. Keith, M.D., LL.D., F.R.S. Address on Evolution. Section K. President, Prof. F. E. Fritsch, D.Sc. Address on some Aspects of the Present-day Investigation of Protophyta. The papers contributed were outside the range of taxonomic interest. Mr S. K. Mukerji gave before the Forestry Section an interesting account, illustrated with slides, of the Forest of Kashmir. The local excursions were a pleasing part of a successful meeting. Annual subscription, £1. Address, Burlington House, Piccadilly, London, W.

British Bryological Society, Vol. i., pt. 5. Report for 1926-7. President, Rev. C. H. Binstead; Secretary, D. A. Jones, M.Sc., A.L.S. 5857 specimens were distributed.

Brown, G. C. The Alien Plants of Essex, in Essex Naturalist, 31-47, 1927. In this excellent paper our member, who has done a large amount of work on the county flora, has prepared a lengthy list of the adventive plants of the county which owe their origin mainly to the extensive maltings on the Hythe Quay at Colchester. Several were first observed in this area in Britain, and at least one Chenopod was new to science. About 275 species, besides many varieties and some sub-species, are enumerated. A few adventives from Dagenham are also included. The list is commendably free from misprints, and it forms a distinct step in the knowledge of the ruderal flora of Essex.

Browne, Lady Isabel, M.P. A New Theory in the Morphology of the Calamarian Cone, in Ann. Bot. 41, 301, 1927.

Bryce, James, Viscount Bryce of Dechmont, O.M., by Right Hon. H. A. L. Fisher, Warden of New College. Macmillan & Co., London. Vol. i. and ii., pp. 360 and 360, 1927; 32/-. The son of a distinguished scientist and of a mother of remarkable powers, nature had in James Bryce a distinguished lover of natural science who, if a wider field had not called him, would have stood in the front rank of whichever subject he might have chosen. In his early days he had closely studied the Isle of Arran and indeed had compiled its flora in a work which some day we hope to reprint in these pages, Lady Bryce having kindly given us her permission. No one better qualified to write the career of so distinguished a man as Lord Bryce could have been found than the late Minister of Education, and in the 700 pages contained in these two volumes, Mr Fisher has given us a clear picture of the man and his work. Bryce was, as one said in our obituary notice (*Report* 693, 1922), a great mountaineer and traveller. It may be remembered that he climbed Ararat (17,000 ft.), doing the last 5000 ft. alone. At a speech to the Alpine Club in 1901 he said, "Ever since, as a boy, I had read of a great inland sea lying between the two ranges of the Cordilleras almost as high above the ocean as the Jungfrau, I wondered as to what the scenery of such mountains and such a sea might be like, and had searched books and questioned travellers without getting from them what I sought." It may be remembered that in that notice in our *Report* are quoted his own words describing Titicaca, and this bit of word painting is, we are glad to see, selected by Mr Fisher in these volumes. "The blue of Titicaca is peculiar, not deep and dark as that of the tropical ocean, nor opaque like the blue of Lake Leman, nor like that warm purple of the Aegean which Homer compares to dark red wine, but a clear, cold, crystalline blue, even as is that of the cold skye vaulted over it. Even in the blazing sunlight it had that sort of chilly glitter one sees in the crevasses of a glacier; and the wavelets sparkled like diamonds." Bryce was a great word painter and Mr Fisher is wise in giving us examples of his style. "At Santiago [with which Bryce compares Innsbruck] as at Innsbruck, one sees the vista of a long straight street closed by towering mountains that crown it with white as the seas crown with blue the streets of Venice. But there the mountains are nearly twice as high as those of the Tyrolean city, and they never put off their snowy vesture." Mr Fisher tells well the story of Bryce's Oxford days, of how near he was to losing his scholarship at Trinity owing to his conscientious objections, of his work there and of his preparing the essay for the Arnold Prize in 1862 on The Holy Roman Empire which exhibited "sound generalisation based upon a wide study of facts" which characterised so much of Bryce's after work. His letters are delightful reading and a wise selection is made of them. They deal vividly with places and things. The history of his political life after he was selected for Tower Hamlets in 1880 with a voting list of 44,000 and an expenditure of not more than £60, is dealt with. As an orator he was not a great success in the Commons. Probably his stern professional manner was too heavy for that assembly. As Mr Fisher says, "The House never gave him its imprimatur." In after years he represented Aberdeenshire in Parliament and became President of the Board of Trade. At the outbreak of the Boer War Bryce took the part of what was called the "Little Englander" and became unpopular. On the accession to power of Mr Campbell-Bannerman, Bryce was given the unthankful office of Minister for Ireland, and to him is due the passing into law of a really helpful housing measure. Later he was given a post—that of Ambassador to the United States—which gave him the opportunity of making for himself a reputation of the first order at Washington. But these are not the pages for the further discussion of this very excellent biography which Mr Fisher has prepared. He had to treat of a great man and he has done it in a great manner. Not the least successful part of these volumes is that which discusses the traits of character which characterised both Bryce and Roosevelt. It was the extraordinary pains which Bryce took in order to make himself acquainted, not only with the innermost working of its domestic, as well as its foreign policy, but with the actual and enormous area of the States themselves, that brought him success. Nor did he confine himself to the "States" alone, for South America, Palestine, and Syria were visited in after years. Travel lovers have much to be grateful for to Mr Fisher for giving so freely from his experiences in these countries. In the House of Lords, after his elevation to that Assembly, he attained a power far above that which the Lower House had accorded him. Demos is often jealous of demos and the more so in proportion to the difference in mental capacity. Queen Victoria said of him—"I liked him for he did so much and he was so modest." King George wrote of him as "an old friend and a trusted counsellor to whom I could always turn, confident in the strength and wisdom of his advice." It is pleasing to know that in his closing years he contemplated preparing a Flora of Ashdown Forest. The Warden's work on Lord Bryce will have a permanent value not only for the really great man whom it delineates, but for the literary skill which brings the figure full into our vision.

Buchenau, Fr. Flora von Bremen in Oldenburg. 361, tt. 10, 1927. Winler Fr., Bremen.

Bulletin of the Torrey Botanical Club, 1927. Editor, Tracy Elliot Frazer. Glabrate species of *Tilia*, B. J. Bush, p. 231. A new *Sagittaria* from Florida, *S. Kurziana*, H. Glück, p. 263. Studies of the Flora of Northern America, H. A. Gleason, with new species, p. 603.

Bulletin de la Societe Botanique de Geneve. Editor, R. Chodat, D. es Sc. 2nd ser., vol. xviii., fasc. 1, January-June 1926.—G. Bonati. Nouvelles Scrophulariacées Malgaches (Madagascar), p. 1-35. Chiefly belong to the genera *Ilysanthes* and *Radaniaea* Benth., *Leucosalpa*, *Halleria* and *Torenia*.—G. Beauverd. Quelques Plantes Polymorphes ou Inédités de la Flore des Environs de Chambéry. Includes *Ophrys Botteroni*. See also p. 323.—K. H. Zahn and H. Romieux. Hieracia Nouveaux de Suisse et de France, p. 145.—M. Chodat et fils contribute a most valuable paper on Fungi. Fasc. 2, July-December 1926.—G. Gaillard. Notes sur les Roses de l'Entremont.—R. Chodat and L. Relifont. La Végétation de Paraguay. The Amarantaceae are an especial feature and new species are described.—G. Beauverd. Premier Apparition en Europe de *Veronica filiformis* Sm. [1791]. Vol. xix., fasc. i., January-June, 1927. L. Leeman. Etude de *Asarum europaeum* L.

Burkill, I. H. Guide to the Singapore Botanic Gardens. It is dedicated to Henry Nicholas Ridley, C.M.G., F.R.S., who was its capable director from 1888 to 1912.

CALIFORNIA, UNIVERSITY OF. As usual there is a full output for 1927. N. L. Gardner contributes valuable papers on Algae. New Rhodophyceae and *Gelidium* from the Pacific Coast, and *Entophysalis* from China are included.

CANNON, WILLIAM AUSTIN. GENERAL AND PHYSIOLOGICAL FEATURES OF THE MORE ARID PORTIONS OF SOUTHERN AFRICA, WITH NOTES ON THE CLIMATIC ENVIRONMENT. Pp. 158, tt. 31, and 13 text figures. Carnegie Institute of Washington, 1924. This is an able study of an exceedingly interesting, arid area. The author's itinerary included a journey by railway across the Great or Central Karroo to De Aar, thence through the Protectorate of South-west Africa to Swakopmund, returning to Cape Town. Later Pretoria was visited and in late spring Pietermaritzburg and Durban. Beaufort West and Matjesfontein were seen in August, September and October. Over 120 species of plants were observed. In the Great or Central Karroo the average rainfall is about 13 inches, falling on about 45 days. At Matjesfontein it is 6.8 inches. Even at O'okiep, at 3935 feet, it is only 6.4 in. and at Wambar only 3.62 in. At Swakopmund, for 12 years, the average rainfall was 0.69 in. The vegetation, such as it is, is very fully described. The most curious of the species is *Welwitschia*, which has already been mentioned in these pages. Mesembryanthemums are, indeed, the predominating species in many places. Mr Cannon alludes to the features of leaf structure and root development, and has succeeded in giving an excellent ecological study of this interesting area. The plates are good and include graphic studies of *Welwitschia* and *Adansonia* with its extraordinary stem development for water storage purposes. The Central Karroo is illustrated with its isolated bunches of species of *Mesembryanthemum*. The Euphorbiae, too, are well shown with the horribly spiny Acacia Karroo. Some of the cotyledons are very remarkable. The book is a valuable addition to the flora of South Africa.

COX, T. H. M. & G. C. TAYLOR. PRIMULAS FOR GARDEN AND GREENHOUSE. pp. 127, tt. 16. Dulau & Co., 32 Old Bond Street, London, 1927; 5 -. This eminently careful, compact and cheap little volume will be of great assistance to those who are trying to grow these charming and increasingly popular flowers—a cult to which none more than the Regius Professors of Botany at Edinburgh, I. B. Balfour and W. W. Smith, has rendered greater assistance. The chapters on Propagation and Cultivation are practical and helpful. The beautiful and favourite Polyanthus is said to be the hybrid of *P. veris* and *P. vulgaris* (alas here called *acaulis* and *officinalis*). Of this there is a good account as well as of the history of the showy and curious Munstead Bunch Primroses. Primulas under glass have a chapter, as have the European species. The authors are too pessimistic when they say "botanists will never cease arguing whether *elatior* is a natural species or a cross between the Primrose and the Cowslip." One has never heard in the past decade a single botanist of repute who doubts the specific distinction of *elatior*. The name, oxlip, has been applied to two different plants. One that occurs in the South-west and North of England is a hybrid, but it is not *elatior*. That species is not a hybrid and is confined to East Anglia. The section on Extra-European Primulas is quite good and beautifully illustrated. A useful table on the times of flowering of the various forms is appended.

CURTIS' BOTANICAL MAGAZINE, Vol. 152, pt. 1. Published for the Royal Horticultural Society; 17/6. Includes a plate, t. 9125, of *Spartina Townsendii* and one, t. 9137, of *Erythraea Scilloides*. T. A. Sprague has already shown that the generic name, *Erythraea*, is antedated by *Centaurium* as given in the British Plant List of 1908, and adopted by Schinz and Thellung.

DANSER, B. H. A Revision of the Queensland Polygona, in Proc. Roy. Soc. Queensland 23, 1927. This able treatment of a difficult genus is the work of our Hon. Member, who for the past years has been working at Buitenzorg, Java. A key to the 15 species is given. Here we may quote the contrasting features of *P. aviculare* and *P. plebium* since the latter is occasionally adventive in Britain. *P. plebium*—Fruit shining, broadest near the middle, about 1 to 1½ mm. long; leaves with invisible lateral nerves. *P. aviculare*—Fruit dull, because of minute longitudinal wrinkles, broadest in or below the middle, 1½ to 2½ mm. long; leaves with distinct lateral nerves. The latter, excessively polymorphic, inhabits the extra-tropical regions of the northern hemisphere. The former is found in the tropical regions of the old world and in the countries south of them. Danser throws out a suggestion that *aviculare* and *plebium* may be only races of a single syngameon. Under *P. minus*, which has a very wide distribution, he gives *P. subsessile* and *P. decipiens* of Robert Brown. Under *P. lapathifolium* he also merges two of Robert Brown's species *glandulosum* and *lanigerum*. *P. Hydropiper*, also a very widely distributed species in Queensland, has a sub-sp. *microcarpum*.

DANSER, B. H. Die Polygonaceen Niederlaendisch-ostindes. Bull. Bot. Buit. viii., 117. 1927. 1 species of *Rheum*, 10 of *Rumex*, 25 of *Polygonum*, 2 of *Muehlenbeckia*, 1 of *Coccoloba*, and 1 of *Antigonon* are described. A key to the genera and species is given. Excellent figures of the fruits of many Rumices are supplied. The Australian *R. Brownii*, which occurs as an alien at Selkirk, has reached Java. *Polygonum minus* is polymorphic there. Danser, it may be observed, still uses the name *P. lapathifolium*. A most exhaustive account of the synonymy of *P. chinense* L. and its distribution is given as well as a striking figure of *P. malaicum*, a new species. This work maintains the high standard of excellence we are accustomed to associate with Dr Danser.

DANSER, B. H. De Polygonum-Soorten der Theetuinen of Java. Contains 9 figures of the Eastern Polygonums.

Danser, B. H. Polygonum-Vegetaties in de Tropen. De Tropische Natur, 28, 1927. Gives views of *Polygonum javanum* and *P. celebicum* in Borneo. Indische Beker Planten. *l.c.* 198. Includes *Nepenthes gymnamphora*. Polygonaceae of New Guinea, p. 44. The results of the Dutch Expedition to New Guinea. Includes *P. celebicum* Danser and *P. minus*, var. *procerum* Danser.

Davis, Bradley M. The History of *Oenothera* in Britain, in Proc. Ann. Phil. Soc., lxv., 349-378, 1926.

Devonshire. Eighteenth Botany Report Trans. Dev. Ass. 58, pp. 121-132, 1926. Edited by the Rev. G. T. Harris. Lists from the various districts of the county are given which it is hoped may lead to the compilation of a County Flora. Devonshire, a most interesting botanical area, has only an antiquated and quite inadequate general flora.

Dixon, H. N. Fossilium Catalogus. II. Plantae Muscineae. pp. 116. Edited by W. Jougmans, Berlin, 1927. There is a good Bibliography. Not only fossil but more recent mosses are included. It is a very valuable contribution.

Drabble, E. & H. Some Flowers and their Dipteran Visitors, in New Phyt. 115, 1927. The observations were mainly made near the edges of the moors in North Derbyshire. Forty-two species were noted as visiting the Blackberry flowers, but only nine the flowers of *Angelica*.

Drewitt, F. Dawtrey, M.A., M.D. Latin Names of Common Plants. pp. 68. H. F. & G. Witherby, London, 1927; 3/6. This useful little volume is one that can be cordially recommended as it gives the derivation of many plant-names and the way to pronounce them. A short account of The Name given is supplied. Speaking of Dioscorides, he says a photographic facsimile of the drawings made to the order of Juliana, daughter of the Roman Emperor Flavius, is in the College of Physicians Library, as well as in the Bodleian. But Oxford has also one of the five copies of the original copper-plate engravings of the same plates which were made by the order of Marie Therèse, and these have on them the Greek names of the plants in Jacquin's handwriting. Short accounts are given of Pliny and Linnaeus. A note on Theophrastus might well have been added. The good index is rendered more valuable in having the vowels marked long or short.

Druce, G. Claridge. The Flora of Oxfordshire, pp. cxxxii., 538. The Clarendon Press, Oxford, 1927; 30/-. The publication of a second edition of the " Flora of Oxfordshire " marks an achievement without parallel in British systematic botany. Dr Druce has now completed his survey of the flora of the Upper Thames valley, and the results of his labours are available in three large and exhaustive county Floras—Berkshire (1897), Buckinghamshire (1926), and Oxfordshire (1886 and 1927). Possibly only those who have attempted the vegetative survey of a large area can form a truly adequate conception of the monumental character of the labour entailed, but even a cursory examination of the present volume must impress the reader with the magnitude of the undertaking, and admiration for the excellent manner in which it has been carried out. The first edition (1886) has been long out of print and therefore difficult to obtain even at a prohibitive price. During the 40 years that have elapsed since its publication important vegetative changes have taken place and a large amount of additional matter has accumulated. The present edition has therefore been entirely rewritten and enumerates over 1600 plants—of which 400 are adventitious—as well as some 700 varieties and forms. The county of Oxfordshire has a long botanical history dating back some 400 years, and as a consequence the compilation of the present volume has necessitated over 20,000 book references, in addition to field-work extending over half-a-century. To Dr Druce all this has evidently been a labour of love, and we are the richer by the possession of a book which, besides being a rich mine of information on its particular subject, is a delight to read. To the reviewer it possesses several features of uncommon interest and great value. Its complete list of some 400 adventitious species is not only local, but of very general importance. Mr J. R. Matthews (*Annals of Bot.*, October 1924) says, "Many questions in plant distribution would be less puzzling if a fuller record of man's influence on the flora were available. No serious student of British plants doubts that many species included in descriptive Floras as if they were native in the county, are in all probability not so. It is the difficulty of disentangling the truly indigenous—*i.e.*, the aboriginal or autochthonous—from the adventive, that necessitates and justifies the careful recording of those immigrants that are establishing themselves at the present time." To mention only two of these—*Brassica elongata* and *Elodea canadensis*—in the reviewer's own environment the former has already extended its range to N. Lancs. and Cumberland, and is locally abundant on the railway banks in these vice-counties, while the latter is common in most of the English Lakes and appears there to have passed its vegetative "wax" and to be decreasing in abundance as in Oxfordshire. To the student of geographical distribution many of the native Oxfordshire plants are also of great interest. To take three examples (of plants not occurring in Central Europe but having a distribution which is essentially that of S.W. Europe)—*Polygala calcarea* is a plant of dry chalky places recorded for Bucks, Berks and Oxfordshire (although not for Northants or Warwick), whence it takes a big northward step to W. Sutherland. *Genista anglica* and *Ulex nanus* have a fairly continuous northerly range into Scotland. These three species may be regarded as having become constituents of our flora by migration from the south, but they differ from species of the entirely "English" group (Stapf, 1914) in ranging over a wider area since they have penetrated into Scotland. *Cardamine bulbifera*, a local woodland species in S.E. England, has not yet been recorded from Oxfordshire, though recorded for the neighbouring counties of Bucks and Berks. As Dr Druce remarks, it may yet be discovered in some of the Chiltern woods of his county.

In Europe the species is native in France, Spain and Portugal. A further outstanding feature of this volume is the extended list of biographical records of the "botanists who have contributed to Oxfordshire botany during the last four centuries." Consideration of space forbids more than a mere enumeration of a few of its more important names—Wm. Turner (1548-68), John Gerard (1597), Wm. Coles (1657), Wm. Browne (c. 1660), John Ray (1670), Robt. Plot (1677), Robt. Morison (1680), Jacob Bobart (c. 1690), Wm. Sherard (1690), John Dillenius (1719), John Sibthorp (1780-94), Wm. Baxter (1812-56), Jno. Boswell (1853), C. C. Babington (1855), Henry Boswell, bryologist (1860), Rev. W. W. Newbould (1860-7), H C. Watson (1873). The complete list occupies 74 pp. of small print, and is intensely interesting. Dr Druce has evidently spared neither time nor expense in making this historical record full and complete. In so doing he has set an example which might with advantage be copied by later writers. To the field-botanist and ecologist the volume is of absorbing interest. The Introduction gives an exceptionally full and lucid account of the Soil, Geology and Meteorology of the county, interspersed with ecological notes of the greatest value, and the text contains the best ecological description of the habitat of each species that I have yet seen in a similar publication. While few species are peculiar to the county—"*Orchis Simia* and *Stachys germanica* appear now to be confined to Oxfordshire"—the list of "absent" species is rather remarkable. Many botanists will share the reviewer's surprise at the absence of such widely distributed inland species as *Drosera rotundifolia*, *Scirpus caespitosus*, *Eriophorum vaginatum*, *Osmunda regalis*, *Myrica Gale*, *Vaccinium Vitis-idaea*, *Thalictrum minus*, *Prunus Padus*, *Listera cordata*, *Myriophyllum alterniflorum*, *Viola palustris*, *Ranunculus Lenormandi*, *Rynchospora alba*, *Carex elata*, *C. canescens* and *C. helodes*, *Myosotis repens*, *Mentha rotundifolia*, *Potamogeton gramineus*, and *P. obtusifolius*. It will be noticed, however, that the great majority of these species prefer acid peaty or boggy habitats and, as Dr Druce points out, such are very rare in the county. The volume is of convenient size and weight to handle, and contains 130 pp. of invaluable Introduction, and 538 pp. of plant records. Some of the type is small, but that is necessitated by the exceptional amount of "ad rem" information imparted. The Flora is throughout written in an engrossing style and appeals at once to any true lover of Nature. In addition to its value as a systematic record, it contains the copious and invaluable field notes—compiled during over 50 years' research—of one of the foremost botanists of our time. The work emphasises again the debt that British systematic botany owes to its voluntary field botanists in general, and to Dr Druce in particular. He will be heartily congratulated by all in being privileged to see the actual publication of his latest complete Flora, which should have a wide circulation. Your reviewer is conscious that he has quite inadequately expressed his own personal pleasure in reading this volume, but is quite certain that any botanist who obtains it will be grateful for having his attention thus directed to it.—W. H. PEARSALL.

EDINBURGH. Notes from the Royal Botanic Garden, Vol. xv., No. 74. Director, Prof. W. Wright Smith. Vacciniaceae from Burma and Western China, W. Edgar Evans, B.Sc., with new species; also by the same author, A Revision of the Genus *Diapensia*. A description of some Asiatic Phanerogams by John Anthony, M.C., is also given.

EDINBURGH. Transactions and Proceedings of the Botanical Society, Vol. xxix., pt. 4, 1926-7. President, Prof. M. Drummond; Hon. Secretary, J. R. Matthews. The Presidential Address, October 21, 1926, was on "Some Reflections on the Nature of Species." Scottish Alpine Botanical Club Excursion, 1925, by Rev. J. J. Marshall Lang Aitken, B.D., gives an account of the beautiful garden of Logan in Wigtownshire. On the journey round the Mull of Galloway many plants were gathered. including *Crithmum maritimum*, *Inula crithmoides*, *Daucus gummifer* and *Pneumaria maritima*. *Phormium tenax* is cultivated as an article of commerce near Castle Kennedy. The excursion in 1926 was to Teesdale. James Wright contributes Notes of Strand Plants, including *Cakile*, and A. Nelson a paper on Hard Seeds and Broken Seedlings in *Trifolium pratense*. Col. H. H. Johnston. Additions to the Flora of Orkney. Includes 1½ pages of corrections. *Cerastium subtetrandrum* is deleted. *Hieracium auratum* should be replaced by *H. inuloides* Tausch, sub-sp. *striatum*, var. *pseudauratum* Zahn. There still seems to be confusion about *H. aurantiacum*. Five new Dandelions, named by Dahlstedt, are included—*T. bipinnatifidum* (Rostr.) Dahlst., *T. chloroleucophyllum* Dahlst., and *T. serratifolium* Dahlst. belong to the Spectabilia, and *T. fulvicarpum* Dahlst., *T. perlaciniatum* Dahlst. (not *T. perlaciniosum* Dahlst.) to the Vulgaria. At Fetlar Col. Johnston also found a new species, the Spectabilian *Taraxacum shetlandicum* Dahlst.

FARRER, REGINALD. FARRER'S LAST JOURNEY, Upper Burma, 1919-20, by E. H. M. Cox. pp. 244, with 29 illustrations from photographs by the author. Dulau & Co., London, 1926; 18/-. There is also included a complete list of all the Rhododendrons collected by Farrer, and his field notes, which have been compiled by Miss Helen T. Maxwell, assistant in the Herbarium of the Royal Botanic Garden, Edinburgh. In the preface the author expresses his indebtedness to the Editor of the *Gardeners' Chronicle* for his permission to quote at length from Farrer's articles which appeared in the years 1919, 1920 and 1921. Prof. W. Wright Smith and the staff of the Royal Botanic Garden, Edinburgh, also rendered unstinted help. In these pages (*Report*, Vol. vi., 102-4) I wrote a memoir of him in which I tried to do justice to a great field naturalist and to an intrepid and untiring explorer. It was a question at the time when I first made his acquaintance if he was to be only a dilettante observer and might even sink to be a valetudinarian since he was not robust, and had the means and some of the temptations to lead an idle and selfish life. But Farrer had in him the divine fire. If at times it seemed to wane and become temporarily dimmed—

for he was a man of many moods—it ever again broke out in flaming zeal. Discomforts, delicate health, and discouragements only seemed to fan the fire and he died in the full warmth of the celestial glow. Mr Cox had the advantage of accompanying Farrer for a year in Upper Burma, just after the War was over. Farrer had only recently recovered from an operation. The expedition was very speedily arranged. Mr Cox shows how difficult is the work of the real collector in a country so wild and so humid as that which they traversed. The difficulties, however, were such as Farrer loved to conquer. As Mr Cox says, his learning was quite out of the ordinary and "I was content to sit at the feet of the master." The part of Upper Burma explored is as large in area as Scotland, and it is a mass of precipitous hills and valleys, packed close. There is no rainy season—"it merely pours solidly for 23 hours out of every 24 from June to November." The people are most uninteresting. The incredibly dirty native Maru is "nothing if not eclectic in his diet, and a beetle or slug squeezed between finger and thumb makes a succulent morsel and a welcome change to the usual vegetable diet." Every foot of ground between the heights of 5000 and 9000 feet is the region of the rain-forest, and here the tree-leech abounds. On the summit of one of the hills they found a tall *Pterostyrax burmanicus* with translucent white blossoms and a delicious aromatic smell, the flowers of which they collected by shooting them down from the tree. On the far side of the Hpimaw Pass, the Lashis, a small mongrel tribe, cultivated the Opium Poppy, and as the author says, "for generations they have used opium as a febrifuge" and he saw no instance of its abuse. That, too, was the case in the English fen districts as it is in many other parts of India to-day. The Rubi there are as varied as here. *R. quinqueflorus* has a vermilion coloured fruit the size of a half-crown, but it is tasteless and hollow. The Magnolias were fine and striking in the area. One had a flower-cup six inches across ranging from pure white through the softest of pinks to a rich salmon and rose, flushed with purple. This is *M. rostrata*. It is about 30 feet high with a crown like a perfect Scots Fir. They thought it surpassed *M. Campbellii*. If so, it must be one of the most beautiful of all trees. Here, too, was the wondrous blue-flowered *Primula sonchifolia* which has a light orange eye. Of this a good illustration is given. Farrer had heard of it at Peking and loudly as it had been praised he was by no means disappointed. The travellers came across the Coffin Juniper, for which the Chinese pay fancy prices—as much as £70 for a plank. This has caused the extirpation of it over great areas. They think that trees nearer 300 than 200 feet high still exist. They found that a dab of Iodine was a sure cure for all insect bites and these were very numerous and painful, but fortunately there were no midges or mosquitoes at the mud-hut which they called their Fort. Farrer (*Gard. Chron.*, May 29, 1920) gives a vivid picture of the floral treasures of the Sabiya-Kaw Pass—meadows which are a solid mass of flowers. We can only glance at Farrer's last year of solitary exploration when he found a magenta-rose flowered *Caltha*. He fell ill on the first of October and he died on the 17th at Myitadi. Oddly enough the news of the death of an Englishman came to an Indian Hill Station to a friend of mine who was able to identify the man as Farrer. The continued soaking wet to which he had been so long subjected doubtless lessened his powers of resistance. He was buried in a clearing above the "fort" on Konglu-bum. As Mr Cox says, " he throve on solitude and adored the high places. . . . He died in harness as he would have willed it, and his body lies among the hills which he loved." It appears that of the 118 Rhododendrons he collected 107 are in the Edinburgh Botanic Garden Herbarium. Twenty-four of these are new to science. We congratulate Mr Cox on producing so good an account of this last journey and in his judicious appreciation of Farrer's life and work.

Fernald, M. L. The Antiquity and Dispersal of Vascular Plants. Quart. Rev. of Biol. i., 212-45, 1926. This able paper discusses antagonistically the Age and Area " Law " of Willis. He quotes a statement that Hooker (an early discoverer of Age and Area) says—" It consequently follows that with the theory of the antiquity of the alpine flora of New Zealand, we should find amongst the plants common to New Zealand and the Antarctic Islands some of the most cosmopolitan and we do so in *Montia fontana*, *Callitriche verna*, *Cardamine hirsuta*, *Epilobium tetragonum* and many others." Hooker was a "lumper" in species, therefore we need not be surprised to find that in a segregate sense not one of the plants mentioned occurs in New Zealand nor with the exception of *Callitriche verna* in the southern hemisphere. This emphasises what has long been in my mind, that when ecological and other writers discuss a certain species in relation to its surroundings and draw deductions from its occurrence it is of primary importance that a specimen of the plant mentioned should be preserved for verification. Have I not heard in the field postulates about a *Festuca ovina* association when it was *rubra* growing there. As a matter of fact I am not certain whether *Montia* grows in New Zealand. Fernald says *M. fontana* L. = *M. minor* Gmel., which is just what it is not. The Linnean specimen labelled *fontana* is *M. lamprosperma*, and it is probably the only form in Sweden and may therefore be taken as the Linnean type. Fernald states that the *Cardamine hirsuta* of Hooker is *Cardamine corymbosa*, *C. glacialis* and *C. heterophylla*, that the *Callitriche* is *C. antarctica* and *C. Muelleri*, and the *Epilobium*, *E. Billardierianum*. Fernald says the occurrence of cosmopolitan species in New Zealand involves an error of 100 per cent. There is an excellent list of the literature cited in this very trenchant criticism of " Age and Area."

Fernald, M. L. Two Years of Botanising in Newfoundland. Contr. Gray Herb., 1926-27. In 1910-11, 14 additions to the Flora were made including 4 species new to science. At Capstan Point they found a wonderful Arctic flora which included the " excessively local relic-species " having the primitive rachilla, which is almost obsolete in modern sedges, projecting from the top of the perigynium. They familiarly called it "Mitre Oglochin," noticing that it had been spread along many paths by the high skin boots of pedestrians to which the prickly little fruits had become attached. There were acres upon acres of the superb blue-violet flowers of *Iris setosa*, var. *canadensis*, and there was *Crystopteris montana* new to Newfoundland. At Flower Cove *Potamogeton vaginatus* was discovered as well as *P. Hillii*, hitherto only known in the Great Lake region. We notice that *Thelypteris* rather than *Dryopteris* is chosen for our old *Lastrea*, and that they reject the suggested trivial *austriacum* in the sense of *spinulosum*. There is an elaborate account of *Habenaria viridis* with its varieties, from which it would appear that our bracteate form is var. *Vaillantii* (Ten.) Fernald. A new species, *H. straminea*, is described. *Braya Longii*, *Potentilla usticapensis*, *Astragalus stragulus*, *Epilobium scalare*, *Angelica laurentiana*, *Orobanche terrae-novae*, *Antennaria Longii*, *A. Wiegandii* and *Lactuca terrae-novae* are also newly described species. Prof. Fernald is to be warmly congratulated upon his investigation into so misty and midgy a country and upon his success in so greatly extending the number of its known plants.

GAGER, C. STUART, Ph.D., Sc.D., Director of the Brooklyn Botanic Garden. **GENERAL BOTANY WITH SPECIAL REFERENCE TO ITS ECONOMIC ASPECTS**, with three Chapters on Heredity and Variation in Plants by Orland E. White, Sc.D. pp. 1056. tt. 689. Blakiston & Son, Philadelphia, 1926; 4 dollars. Of the making of Botanical Text-Books there is no end, and one may frankly say that there are too many. Each of them perhaps has something different to say from the others even although the main treatment may be the same, but this work of Dr Gager's stands on a different plane. In the thoughtful and suggestive preface the author says, "One is a better scientist if he is not merely a scientist, just as one is a better lawyer, farmer, merchant, preacher, if he is more than his calling." So, too, this book is much more than the ordinary text-book and it supposes that a foundation for reading the text will be laid in thorough laboratory work. So the text is enriched with interesting information, not always perhaps strictly botanical but intimately related to the plant or botanical subject discussed. He thus humanises knowledge and shows how intimately the student's own life is bound up with the life and uses of plants. Dr Gager aptly quotes Lamarck's eloquent description of the Science of Botany which "does not consist, as is commonly supposed, in the sterile ability to memorise by heart many names of plants and to apply the names to the plants to which they belong, but it consists in an intimate knowledge of the plants themselves, their development, their organisation, their relations, the essential characters which distinguish species with constancy, the common traits which bind together certain numbers of different plants and result in the formation of different kinds of groups . . . the limits which nature has imposed on varieties, that is to say on the different variations which circumstances have been able to bring about in plants. These different kinds of knowledge always indicate that marked difference beween the botanist who embraces them both, and the simple nomenclator." The first chapter is entitled The Problems of Botany as Illustrated by the Clover, *Trifolium pratense*. In a few pages the salient features are brought clearly before the reader. The Cell, the Vegetative Function of Plants, Reproduction and Life History are treated of clearly and powerfully, with copious illustrations. The Nitrogen Problem is duly dealt with and some startling figures are given. Every ton of Clover needs 40 pounds weight of nitrogen = 4 tons of ordinary manure, yet the air over one acre of ground contains 75 million pounds of nitrogen, only a minute portion of which is at the actual service of organic life. Part iv. is devoted to the great groups of Seed-Bearing Plants. The various families are described, always with some economic reference and aptly told point of interest. They will be read by many to whom technical classification is a bore. This portly volume, "chockful of good things," deserves as it will almost certainly have, a large circle of readers in English-speaking countries.

Godfery, Col. M. J. Natural Orchid Hybrids. Genetica ix., 19. 1927. With figures, among others, of *Habenaria viridis* × *Orchis latifolia* and *Gymnadenia conopsea* × *Orchis maculata*. Coloured representations of several hybrids are given. The paper is of considerable botanical interest.

Grossheim, A. A. Flora of the Talysh, pp. 273, tt. 16, 1926. The author, the botanist of the Tiflis Botanic Garden, has given a valuable account of this little known area which, for the purpose of the Flora, he has divided into botanical-geographical districts.

Gwynne-Vaughan, Dame H. C. I., D.B.E., LL.D., D.Sc., & B. Barnes, B.Sc. The Structure and Development of the Fungi. pp. xvi., 384, t. 1, and 285 figs. Cambridge University Press, 1927; 15/-. This thoughtful volume contains an account of the whole of the Fungi, and is illustrated by 285 text figures, many of which are original. The authors say the book is addressed to the student rather than to the investigator. A good bibliography, confessedly not exhaustive although extending to 27 pages, is appended as well as descriptions of Culture Media and Fixatives and Mycological Technique, the latter an exceedingly useful chapter. The Introduction treats of Sexual Reproduction, Spores and Spore Mother Cells, Accessory Spores, Morphology of the Spore and of Classification. The Myxomycetes and Plasmodiophorales, forms resembling Fungi, are discussed. The Physiology is very thoroughly done—Saprophytism, Parasitism, Symbiosis, Specialisation of Parasitism, Reaction of Stimuli coming under notice. The Phycomycetes, Archimycetes, Oomycetes, Zygomycetes, Ascomycetes, Plectomycetes, Discomycetes, Pyrenomycetes, Basidiomycetes, Hemi-, Proto- and Autobasidiomycetes are treated of under these headings. The last has about 12,000 species of which the Hymenomycetes number over 10,000. They include the Mushroom and *Amanita Muscaria*. Its ally, *A. phalloides*, is said to be responsible for 90 per cent. of the deaths due to fungus poisoning. One is not up in Fungus nomenclature but one is more accustomed to see the Stinkhorn named *Ithyphallus*. The warmest congratulations are offered to the authors of this excellent text-book.

GARDENERS' CHRONICLE, 1927. Weekly. Mr F. Kingdon Ward continues his account of the Ninth Expedition in Asia and gives some excellent views of Upper Burmah, etc. Mr N. E. Brown supplies further descriptions of the Mesembryanthemums and gives Keys to the large number of new genera. On p. 18 a short account of the Glasgow Botanic Gardens is given, and on p. 31 a fine photograph of Sargent's Cherry, *Prunus sachalinensis*, at Shoji in Japan. There I saw trees over 60 feet high in glorious flower. A fine specimen of the Oak in Brocket Hall Park is figured on p. 43. Queen Elizabeth is said to have sat under it. Its girth at 3 feet from the ground is 31 feet 8 inches. Economic Plants of the Bay Islands of Honduras are treated of on p. 50. The Rev. Hilderic Friend continues on p. 266 his interesting articles on Ideal Gardens and Plant Lore. On p. 269 the Botanic Gardens at Georgetown, British Guiana, are described. The large flowered *Allamanda cathartica* was a conspicuous feature there when I visited the place in the rainy season in 1911. There are 85 species of Tropical Palms grown in the gardens and fine specimens of *Pithecolobium Saman*, a very beautiful shade tree. An account of the extraordinary plant, *Welwitchia mirabilis*, is given (ii., 10, 1927) with two excellent illustrations by Mr W. C. Worsdell. See Cannon's "General and Phytological Features of the Vegetation of the more Arid Portion of South Africa." A charming article, devoted to a description of the Esterel District, is given on ii., 11, 1927, by A. T. Johnson. Very thoughtful papers are to be found in the numbers of July 2nd and 9th, on Botanical and Horticultural Adventure and Romance, from which we extract the following:—"The world of to-day is for the naturalist to explore; not merely the plant hunter or the butterfly collector, but the trained observer. Nowadays we over-specialise and collecting has become identified too much with the acquisitive spirit and divorced from the pioneering spirit. . . . Had Darwin not written the 'Origin of Species,' we should still owe him a debt for the 'Voyage of the Beagle.' Wallace's 'Island Life' and 'Malay Archipelago' are fascinating works, as is Hooker's 'Himalayan Journal.' Such books are rarely written nowadays; the writing of a good natural history travel book is almost a lost art, though we have other models besides those mentioned—Waterton's 'Wanderings in South America' and Bates' 'Naturalist in Nicaragua' being among the best. In each of these the glamour of the tropics has laid its spell upon the author, who not only describes the lavish scenery but is also inspired to throw a flood of light on many a knotty problem. . . . But if the modern traveller does not know enough about natural history, assuredly the modern naturalist does not know enough about life at first hand in the forcing house of the tropics, because he is not a traveller. And it is to the tropics one must go if one would grasp something of the mystery of life. There is something lacking in the Temperate Zone, not only in degree but in kind. There where Life is lived at high pressure, the strangest and most exquisitely adapted forms of life are met with; as, though under conditions of maximum provocation and intensive civil war, only the queer and wonderful survive. The study of natural history is in danger. The modern tendency is to regard the microscope as the end, rather than the means, and its place in the combined attack on the unknown requires readjustment. A new inspiration is needed, a new leader, one who will fire the ardour of the rising generation as did the famous hypothesis to which the name 'Origin of Species' was given. Can another such leader as Darwin arise in the heavy atmosphere of the laboratory, or the dusty herbarium, or in our dull, unimaginative museums? More and more our young scientific men settle down to routine work without ever having seen the tropics, thereby sacrificing the greatest adventure in education. . . . Above all, the blessed word 'research' has claimed thousands of victims, who peer through the microscope until a chronic myopia prevents them from seeing anything but the nearest trees. Research is a fine thing in its way, and a necessary thing; but it comes at the end of the chapter, not at the beginning. . . . The chemist may investigate the reactions and properties of matter, but the future lies with the organic chemist who explores the complex materials through which life is expressed. The physicist investigates the structure of atoms, as the basis of matter, and we find that in explaining matter he has explained it away; so that unless he can bridge the gulf between matter and mind his results will ultimately be sterile. It would seem then that we are working on wrong lines; the division of labour has gone too far, and the field naturalist is too completely divorced from the laboratory worker. We require more vision and fewer visionaries." There is a revision of Violas by Lt.-Col. E. Enever Todd as well as a mass of general horticultural information.

Harrison, J. Heslop, & K. B. Blackburn. The Course of Pollen Formation in Certain Roses with some Deductions therefrom. Mem. Hort. Soc. New York, 3, 23-32, 1927. The authors rightly say that the enormous variation within the genus Rosa group has practically defeated all attempts to classify it into species of the same value as those of other genera. To elucidate this difficulty they have attacked the problem from various angles, that of the experimental breeder, of the field worker, of the parasitologist, of the cytologist, and so on. The cytological examination showed that there existed in the roses a polyploid series based on the chromosome number of seven, but they find that the tetraploids and hexaploids were of two types. Judging by the behaviour of the *Drosera* hybrid, *D. obovata*, in the chromosome number and other reasons stated in the paper, the authors came to the conclusion that the Canine Roses are themselves of hybrid origin. This startling hypothesis they support by citing the pollen condition in a series of Canine microgenes. These yield the following percentages of good pollen 0-10 per cent. in AFZELIANAE (*subcristata*, *Reuteri*); EUCANINAE (*biserrata*, *inconspicua*), RUBIGINOSAE (*echinocarpa*); AGRESTES (*Borreri*); VILLOSAE (*caerulea*, *pseudo-rubiginosa*); TOMENTOSAE (*tomentosa*); 10-30 per cent. in AFZELIANAE (*coriifolia*, etc.); EUCANINAE (*lutetiana*, *hemitricha*, *aciculata*); RUBIGINOSAE (*comosa*); TOMENTOSAE (*sylvestris*, *pseudo-cuspidata*, *foetida*); 30-50 per cent. in EUCANINAE (*flexibilis*); RUBRIFOLIAE (*rubrifolia*); VILLOSAE (*submollis*); 50-70 per cent. in EUCANINAE (*fallens*); VILLOSAE (*omissa*); and 75-95 per cent. in EUCANINAE (*senticosa*); VILLOSAE (*mollis*). Notwithstanding the aborted pollen say in *subcristata*, *fugax* and *caerulea* these had as many fruits as the other roses and from experiments the authors believe that the Canine Roses, to say the least, are faculatively apomictical. The able reasoning, following the results of their experiments, must be consulted in the original paper.

HAUMAN, LUCIEN. Etude Phytogéographique de la Patagonie. in Bull. Soc. Roy. Bot. Belg. 105, 1925. This forms a very interesting survey of a little known region. The mountain flora is peculiar, *Gunnera* growing at 1100 metres. The forest of *Nothofagus* reaches to 1000 metres, and a delicate Violet, *tridentata*, occurs at 900 metres. Perpetual snow occurs as low down as 1200 metres. The author ascended the Sierra Buenos-Aires from which a view of extraordinary beauty was obtained. Many good illustrations are appended, among them being *Berberis buxifolia*, *Benthamiella patagonica*, and the weird *Nassauria glomerulosa* in divers forms. The lake, covered with floating bergs from the glacier Moreno, with a group of *Drimys Winteri*, is well shown.

HAVILAND, MAUD D. (Mrs H. H. Brindley). FOREST, STEPPE AND TUNDRA: STUDIES IN ANIMAL ENVIRONMENT. pp. 218, tt. 8 and map. Cambridge University Press, 1927; 12/6. More precisely the areas described are The Rain-forest, The Steppe, The Tundra, and The Taija. The Rain-forest Of the Rain-forest typical examples exist in South America around the basins of the Amazon and Orinoco, and in parts of tthe Central American Isthmus; in Central and Western Africa along the courses of the Congo, Niger and Zambesi Rivers; in Madagascar; in the Indo-Malay Straits, Borneo, New Guinea, etc. The determining factors are a high even temperature and abundant moisture. British Guiana was the district in which Miss Haviland made her observations and some fine photographs illustrate the kind of scenery it affords. Naturally it is the animal life which attracted the authoress most, but there are passing references to the vegetation. She points out the remarkable water system of the reservoir plants such as the Heliconias and the Bromeliads. Picado called the Bromelia forest flora a "grand marécage fractionnée– a discontinuous marsh. In these thousands of aquaria, high up, it may be, on the trunks and branches, each holding about half-a-pint of water, these plant-cups situate in the leaf axils, "take the place of the larger but less numerous pools of terrestrial marshland," and, as is the case with the latter, they afford breeding places for myriads of mosquitoes. In Trinidad, when the war against these predaceous and poisonous insects was first waged by cleaning out of gullies and by paraffining the water pools, a distinct improvement was not noticed until the trees had been stripped of the parasitic Bromeliads. Miss Haviland gives a long list of the inhabitants of these "aquaria" and it is a varied and astounding one. Some of the larvae, it is said, have been specially adapted for their habitation. There is a symbiotic influence also, for the plant gives out substances which keep the water, despite its organic contents, from putrifying and the plant itself absorbs some of the nitrogenous material. There is a vivid account of the bird life and also of the ant communities and their pilgrimages. It is stated that a termite queen can lay 30,000 eggs a day for ten years. Miss Haviland is a whole-hearted supporter of protective mimicry and she gives many examples to illustrate it. The Steppe, the great undulating grass country of the Old World and the prairies in North America, has its counterpart in Australia, South Africa and in the "llanos" and "pampas" of South America. The largest stretch is that of Southern Russia and Western Siberia which reaches from the plains of Hungary to the highlands of Mt. Altai. There is a clear and able account of the steppe formation and its inhabitants. The Tundra is a huge tract of land which also lies across Eurasia north of the Arctic Circle and is continued into North America as the "barren grounds." Typical tundra is treeless, and for the greater part of the year it is frozen to a foot or so beneath the surface. Physiologically, therefore, it is dry and this is intensified by the desiccating winds. Its aspect is that of utter desolation. It was the region drained by the Yenisei which Miss Haviland, accompanied by my friend, M. Czaplicka, explored. The description given here of the animal and bird life is vivid. The insects are a class to themselves—they have but 10 to 12 weeks to exist, but the mosquitoes make the most of it. Nowhere else perhaps is their reign more supreme and despotic. The flowers, though not numerous, are interesting and those collected by M. Czaplicka on her journey she kindly gave to me and they are now in the University Herbarium at Oxford. Miss Haviland also gives a chapter on The Taiga which is the climatic formation of coniferous forest covering subarctic Eurasia and North America. The Taija of Siberia is 3600 miles long by 800 miles wide and its literature is insignificant. There, too, the mosquitoes render life well nigh insupportable. The bird life is plentiful and vocal. As will be gathered this work of Miss Haviland is of no ephemeral value, and it can be cordially recommended to all lovers of the wild.

HAYEK, A. Prod. Fl. Peninsulae Balcanicae. Fedde Rep. 30, 961-1193, 1927.

HEGI, G. ILLUSTRIERTE FLORA VON MITTEL-EUROPA. J. F. Lehmanns, München. Convolvulacae, Polemoniaceae, Boraginaceae, etc. The complete set costs about £20.

Herrera, Fortunatio P. Chloris Cuzcoensis Cuzco Peru, 1926. Enumerates 110 genera and 187 species of Cryptogams, 2 Gymnosperms, 63 genera, and 9 species of Monocotyledons, and 299 genera, and 512 species of Dicotyledons. Compositae come first with 55 genera and 141 species, followed by Leguminosae with 21 genera and 33 species, Gramineae with 21 genera and 28 species, and Scrophulariaceae with 7 genera and 24 species.

Hjelt, Hjalmar. Conspectus Florae Fennicae. Vol. viii. Compositae. Act. Soc. Faun. et Fl. Fennica, 54, 397, 1927.

Horticultural, Royal Society Journal. Edited by F. J. Chittenden. Half-yearly. Includes a description of The Gardens at Logan in Wigtownshire, delightfully illustrated with pictures, among others, of *Alocasia macrolissa*, *Dicksonia antarctica*, *Mesembryanthemum*, *Cordyline* and *Drimys*. The mild climate allows such plants as *Euphorbia mellifera* to grow 10 feet high, *Cordyline* and the giant *Echium Pininana* to 15 feet, and *Rosa Moyesii* and *Cestrium elegans* to 13 feet. *Olearia* grows with wonderful beauty of form and prolific flowering, and there are Rhododendrons galore. A visit to these gardens offers a revelation of beauty and interest. Kingdon Ward writes on his " Botanical Exploration in Tibet." There are photographs of *Lilium hyacinthinum*, *Celmisia Lindsayi* and *Lobelia Deckoni*, a Conifer forest at 11,000 feet, the Mixed Forest in the Tsangpo Valley, Sand-dunes on the Upper Tsangpo, etc. He left Darjeeling on March 14, and ascended the Titsa Valley which Hooker explored 80 years ago. There is a most glowing account of the plants seen in his journey. On p. 25 F. R. S. Balfour gives an appreciative sketch of Sir George Lindsay Holford (See *Rep. B.E.C.* 97, 1926) with a speaking portrait, and H. G. Alexander contributes an account of the Westonbirt orchids and shows how these had been cultivated on a princely scale. Nearly 300 awards were made to individual plants. 10 diplomas were given by the Orchid Club, 59 Cultural Commendations from the R.H.S. in respect of individual specimens, and 17 Lindley Medals were won. A Gold Medal was won in 1902 and the magnificent Veitchian Cup at the Temple Show in 1907. In 1912, at the International Exhibition, no less a space than 1100 square feet was occupied, and it was the outstanding feature of the show. It secured the King's Cup. Many other special cups have been won, and Westonbirt has to its credit 33 gold and numerous silver medals. The Cymbidiums at Westonbirt were the finest in the world. On my last visit there about 10,000 pots were occupied and over 1000 spikes in flower could be seen at one time. Over 50 new Cymbidiums have been raised and named. Their cultivation was begun in 1907. *Vanda caerulea*, with a single stem and over 40 leaves bore two spikes of 12 and 16 flowers. On Her Majesty's visit in 1922 a new hybrid flowered for the first time and, with the Queen's permission, it was named *Laelia Cattleya* Queen Mary. Nor shall I ever forget the 800 pots of *Amaryllis* (*Hippeastrum*) in gorgeous flowering as lit up by the descending sun. Alas the name Westonbirt now is linked with saddened memory as one knows that all its glory in the past was due to the care and love which was bestowed on it by one of the best English gentlemen, Sir George Holford. Miss Eleanora Armitage, on p. 40, contributes notes on Amazonian Vegetation. Plants of the Eastern Pyrenees, T. Ashton Lofthouse, is a very interesting paper on a fascinating region. Gavarnie proved especially beautiful. Nomenclature of Garden Plants—Chaos or Unity?, Dr J. V. Suringar. There is much of value in this article. He criticises Rehder for writing *Pseudotsuga taxifolia* Britt., var. *Fretsii* Rehder since Beissner had previously established the variety under *P. Douglasii* Carr. But Rehder is absolutely correct. Beissner did not use it under *taxifolia*, and to say so is making a man say what he has not said—a practice too common with some botanists even in Britain. The counsel of perfection would be to write *P. taxifolia* Britton, var. *Fretsii* (Beissn.) Rehder. The Unlimited Scheme and Fixed Position of the Plant Body, by Prof. F. O. Bower, F.R.S., is an abstract of the Masters Lecture, 1926. Mr E. A. Bunyard contributes an article on the Hooker and Lindley Drawings. He tells us that the first meeting of the Society took place in Hatchard's Book Shop, Piccadilly, on March 7, 1804. In 1859 it was found necessary to liquidate all the valuable assets. This led to the disposal of a large series of original drawings. The Council have recently been able to purchase many of the Hooker and Lindley drawings, the latter being especially interesting. William Jackson Hooker was taught drawing by Francis Bauer—a good draftsman, but of course not equal to his brother Ferdinand. Hooker engraved and coloured Knight's *Herefordshire Pomona*. He is also said to have coloured the plates of Lambert's *Pinetum* and he produced his *Pomona Londinensis* and *Paradisus Londinensis*. Reproductions of the true Chili Strawberry and of *Rosa spinosissima*, var. *pallida*, by Hooker are included. Lindley gives *Rosa Doniana*, var. *scotica* and var. "Warwickshire;" *R. arvensis*, var. *Andersonianii*, which do not seem to be noticed by Wolley-Dod. Captain Kingdon Ward continues his Botanical Explorations in Tibet. There are some very beautiful illustrations. Mr J. E. Dandy supplies a Clavis to the Species of *Magnolia*, which will be a welcome addition to Mr Millais' book.

HULPHERS, A. Myosotis Studien. Svensk Bot. Tids., Vol. 21, p. 63, 1927.

HUTCHINSON, J., F.L.S., and J. M. DALZIEL, M.D., F.L.S. FLORA OF WEST TROPICAL AFRICA. Vol. i., pt. 1, pp. 246. tt. 106 and map. Published by The Crown Agents for the Colonies, 1927; 8/6. Preface by Dr A. W. Hill. An account is given of Botanical Exploration in West Africa. Adanson was the first botanist to study the flora of Senegal and the Gambia and a figure of the Baobab, *Adansonia digitata*, appropriately forms the frontispiece. Mungo Park, too, brought plants back from Gambia which are at the Natural History Museum. The genus, *Parkia*, the West African Locust Bean Trees, commemorates his visits, the second ending fatally in the Bussa Rapids of Northern Nigeria. Scott-Elliot collected between 4000 and 5000 specimens in Sierra Leone in 1891-2. The authors have considerately given a list of the various collectors from each of the areas included in their flora. An unusually good and comprehensive glossary is supplied and keys to the groups and families occupy 17 pages. The arrangement of the families in Volume I. begins with the Gymnospermae followed by the Angiospermae—Anonaceae to Umbelliferae. One notices that the family name Ficoidaceae is used and it has four genera under it. There is a *Polygonum tomentosum* Willd. included which does not appear to be a British plant. The authors are to be congratulated on a fine piece of work which, if it does not take so long a time to complete as other floras of Africa, will maintain the high standard of Kew production.

Iconum Botanicarum Index Londinensis. Under this title a new edition of Pritzel's Icones, first issued in 1855, is being prepared under the auspices of the Royal Horticultural Society. It will be published in six volumes, two of which are to be issued in 1928, two in 1929, and two in 1930. They will be similar to the "Index Kewensis" in size and in having three columns in a page. They will be issued by subscription at £25 paid in advance or £9 for the first two and £4 10/- for each of the remaining volumes III. to VI. It is being prepared under the editorship of Dr Stapf. The Director of the Royal Botanic Gardens, Kew, placed the necessary accommodation and the use of the Kew Library at the services of the compilers. The work will contain 450,000 references to British plants.

Irish Naturalists' Journal. Bot. Editors, S. A. Bennett, M.A., B.Sc., Rev. W. B. Megan, B.A., and Prof. James Small, D.Sc. Bimonthly; 6/-. It contains a few notes of Botanical Interest. The Longevity of Seeds, by D. Clouston; A Phenological Survey of Ireland, by A. W. Stelfox; The Fungi, by A. E. Muskett, and Cushendun Notes, by R. L. Praeger.

Johnston, Col. H. Halcro. Additions to the Flora of Orkney. Tenth Paper in Trans. Bot. Soc. Edin. xxiv., 408, 1927. Contains a page or more of corrections, also records *Cardamine pratensis*, var. *uniflora*, *Rosa mollis*, var. *glandulosa*, *R. omissa*, *R. dumetorum*, var. *semiglabra*, *R. glauca*, var. *denticulata*, *Hieracium striatum* Tausch, var. *pseudoauratum* Zahn, *Potamogeton suecicus* and some new species of *Taraxacum* (see under Taraxaca). Additions to the Flora of Shetland, *l.c.* 429, 1927. Includes *Caltha palustris*, var. *minor*, *Cerastium tetrandrum*, var. *eglandulosum*, and a new Dandelion, *Taraxacum shetlandicum*.

Johnston, J. M. Studies in the Boraginaceae, VI. A Revision of the South American Boraginoideae. Contrib. Gray Herb. Vol. 78. 1-118, 1927.

JOURNAL OF BOTANY. Edited by A. B. Rendle, F.R.S. Monthly, 2/-. The chief systematic papers are treated of under the respective species.

JOURNAL OF ECOLOGY. Edited by A. G. Tansley, F.R.S. Vol. xv., Nos. 1 and 2, February and August 1927. The Physiology and Ecology of the Calcifuge Habit in *Eriophorum angustifolium* by W. H. Pearsall and E. Marjory Wray. Studies of the Vegetation of the English Chalk, by Violet L. Anderson. *Anemone Pulsatilla* is said to have an average working depth of roots of 0.5-2.5 in., maximum penetration 3.5 in., average spread 2.5 in. *Asperula cynanchica* penetrated 6 in., *Cirsium acaule* 9.5 in., *Hippocrepis* 12.5 in., the Parsnep 14.5 in., *Thymus* 28 in., *Galium verum* 30 in., and *Ononis spinosa* 37 in. Most of the plants, however, examined had small penetration. The volume of soil exploited by the root system varied immensely—*Ajuga Chamaepitys* was satisfied with 20 cubic inches whereas *Helianthemum* used 1508 cubic inches! The chief feeding roots are within 9 inches of the surface. The number of stomata varied greatly from 52 to the square mm. in *Blackstonea*, growing on clay, to 492 in *Plantago lanceolata*. The present very useful investigation, which has needed much patient industry to accomplish, bears out the generally accepted feeling that the chalk flora is a xerophyte community. Studies on the Vegetation of Nottinghamshire: the Ecology of the Bunter Sandstone, by J. W. Hopkinson. This includes a very interesting study of the Woodlands of Sherwood Forest and its Oaks, both species with the hybrids being found. A list of the species of the Grass Heath Flora is given. Distribution of Vegetation on the Plains of European Russia, by B. A. Keller. L. Cockayne and H. H. Allan give a Paper on The Bearing of Ecological Studies in New Zealand on Botanical Taxononic Conceptions and Procedure. They emphasise the fact that our knowledge of many species is, from the standpoint of their paper, in its infancy. It is little exaggeration to declare that the commoner a species is the less is known about it—and this is also true of places nearest home. Our member, whom we were delighted to see at the Ecological Society Meeting in Birmingham, Prof. R. S. Adamson, gave a Preliminary Treatment of The Plant Communities of Table Mountain. It is an extraordinarily good account of the vegetation of a fascinating area. W. L. Morss writes on The Plant Colonisation of Merse Lands in the Estuary of the River Nith, a Scottish river separating Dumfries from Kirkcudbright, being tidal as far inland as Dumfries. It would be interesting to know the segregates of the species mentioned. The paper again suggests the desirability of having specimens preserved so that they could be consulted should any doubt arise as to which plant was actually studied. The nomenclature is in many instances archaic. Allusions are made to an "*Armeria* Society" and *Statice Limonium* and to a "*Statice* Society." There are few things on which taxonomists are better agreed than that the Sea Lavender is a *Limonium* and not a *Statice*, and there are several forms of *Statice maritima*. The Heath Association of Hindhead Common is described by **F. E. Fritsch.**

Kew, Bulletin of Miscellaneous Information. No. 1. The Falkland Islands with Photographs of the scenery, Sir John Middleton. On the Flora of the Nearer East (No. 3), A. R. Horwood and W. B. Turrill. Deals with Angora Plants collected by Rt. Hon. Sir R. C. Lindsay. Angora is the new capital of Turkey. Includes *Ruta Lindsayi* Turrill, *Vicia anatolica* Turrill, etc. Grasses of the Fiji Islands, V. S. Summerhayes and C. E. Hubbard, with a key to the species. No. 2, Contributions to the Flora of Siam, W. G. Craib, with many new species. No 3. Contributions towards a Phylogenetic Classification of Flowering Plants, J. Hutchinson and J. E. Dandy. Genera of Saxafragaceae, J. E. Dandy, with key. There are said to be about 320 species of *Saxifraga*. New species from Panama, Coiba and Cocos Islands, L. A. M. Riley. No. 4. Tropical African Plants, J. Hutchinson and J. Dalziel. No. 5, The Variability of the Camphor Tree in Formosa, F. N. Howes. Contribution to the Flora of Burma, parts iii. and iv. No. 6, The Genus *Dioscorea* in Siam, D. Prain and I. M. Burkill. No. 7, Genera of Magnoliaceae, J. E. Dandy, with key. New genera are *Alcimandra*, *Pachylarnax* and *Elmerrillia*. Notes on African Grasses, with many new species, by Dr Stapf, etc. In opposition to Bentham & Hooker, *Echinochloa* is kept distinct from *Panicum*. No. 8, Sir George Watt supplies a valuable account of the genus *Gossypium* of which several new species are included. No. 9, There is an interesting account of Agriculture and Horticulture in Majorca, which a visitor to that charming Island would do well to read. The type of *Veronica* (*Hebe*) *Traversii* is discussed by V. S. Summerhayes. No. 10, M. L. Green has a paper on the History of Plant Nomenclature which includes a short account of the production of the Index Kewensis. African Orchids, with new species, V. S. Summerhayes. Appendix i. Review of the Work of the Royal Botanic Garden, Kew, during 1926. Appendix ii. List of Seeds of Hardy Herbaceous Plants and of Trees and Shrubs which have ripened at Kew in 1927.

Kostychev, Dr S. Plant Respiration. Translated and edited by Charles J. Lyon, Ph.D. pp. 163. P. Blakiston & Co., Philadelphia, 1927; 2.50 dollars. The author states that for the first time he has portrayed the modern, outstanding features of the science of plant respiration and has considered carefully the whole biochemical side of the problem from a uniform standpoint. Dr Lyon has performed a great service in translating from the Russian into English this very technical and recondite work, which is outside the range of Taxonomic Botany.

Laing, R. M., and E. W. Blackwell. Plants of New Zealand. Third edition, revised and enlarged. pp. 468. 175 original photographs. H. Milford, Oxford University Press, 1927; 18/-. Unfortunately the authors have departed from the Benthamian sequence and have followed that of Engler as being "much more in harmony with evolutionary ideas than that usually adopted." The valuable paper by Dr Parkin, which appeared in our last *Report*, had probably not been seen by them. The group of islands known as New Zealand, situate in a turbulent sea, has an extraordinary flora, which Drudé considers to be most closely related to that of Antarctic and Melanesian areas. Three-fourths of its species are said to be endemic. That it should have a varied flora is to be imagined since it has great altitudinal range and a wide variety of soils. Its rainfall varies from 13 in. in Central Otago to 228 in. at Peysegur Point, and those two places are only 150 miles apart. What in England would be meadow-lands are in New Zealand covered with tussock grass, consisting of *Poa caespitosa*, *P. anceps*, and various species of *Festuca* and *Danthonia*; toe-toe, *Arundo conspicua*, the tallest grass in the flora, and Palm Lily. In Canterbury 2½ millions of acres are wide, open, tussock plains. Many of these grasses come to Tweedside in New Zealand wool. The Bush is usually gloomy and without striking flowers but, particularly in the North Island, the Nikau Palms and Cabbage Trees bring with them a suggestion of a warmer land. The reduction of the Bush area goes on apace. In 1893 there were 20 million acres; in 1925 it had shrunk to 12½ million. The trees consist of "birch" (really akin to the English Beech) which consists of species of Nothofagi, most attractive trees. The Kauri Pine, *Agathis australis,* a fine tree reaching 150 feet in height is being rapidly extirpated. A tree 5 feet in diameter has been estimated to be 300 years old. The wood takes a fine polish and affords the well known Kauri gum. It is extremely resinous. The best gum exists in a "fossil" state and lies buried in the ground, once forest land. Like amber, which it resembles in appearance, it often has insects, etc., entombed in it. A very large tree at Mercury Bay was estimated by Mr T. Kirk to be 4000 years old, but Mr Cheeseman gave the wiser suggestion of 1700 years. The authors have given a botanical introduction and a key to the Families. There is much of interest throughout the work which is capitally illustrated. No botanical visitor to New Zealand should be without it. The fruticose Veronicas appear as *Hebe* and some beautiful figures are given. The genus is a large one in New Zealand containing over a hundred species. A good glossary is also appended. One wishes that as good a volume was obtainable for the Kenya area in Africa.

LANG, W. H., D.Sc., F.R.S. The Fossil Plants of the Old Red Sandstone in Orkney. Lecture given to the Orkney Natural History Society, August 19, 1927.

LINNEAN SOCIETY. President, Sir Sidney F. Harmer, K.B.E., F.R.S. Transactions, November 26, 1926, to May 27, 1927, December 1927; 8/-. December 26, 1926. C. E. Salmon exhibited and commented on some interesting British plants—*Vicia angustifolia*, var. *lutescens* Corbière from Cornwall, *Alchemilla connivens*, *A. tenuis*, *A. Salmoniana* Jaq., etc. January 6, 1927. A. J. Wilmott gave a preliminary account of a visit to the Sierre Nevada. January 20. Prof. R. R. Gates gave an account of the Tundra Vegetation of Russian Lapland. February 3. Dr G. C. Druce exhibited some British plants, including *Senecio erra-*

ticus. February 17. Miss E. Vachell exhibited *Anagallis arvensis* bearing red and blue flowers on the same plant. See *Rep. B.E.C.* 309, 1927. May 3. A. J. Wilmott gave an account of the Irish *Spiranthes* suggesting that the southern form is *S. gemmipara*, the northern one *S. stricta* Ryd. May 17. E. Marsden Jones and W. B. Turrill gave an account of a new method of preparing herbarium specimens. This was to cover a piece of paper with the paste called Gloy and then to lay out the specimen upon it, pressing it flat and wiping away excess of paste. The sheet is then placed in a press between paper and considerable pressure applied. The specimens should be looked at within a few hours and any excess of paste removed. In a few days the specimens are dry. They retain their shape and sometimes their colour indefinitely. May 12. J. Groves read a paper on the Charophyta collected in Madagascar by Mr T. B. Blow. Mr Blow gave the results of his investigation as to the asserted property of Charas to destroy the larvae of mosquitoes. The results were, however, negative. Capt. F. Kingdon Ward gave an account of the Sino-Himalayan Flora. May 24. The Crisp Medal was given to Prof. H. G. Cannon and the Linnean Gold Medal to Dr Otto Stapf. Dr Rendle gave his Presidential Address. The obituaries, supplied chiefly by Dr Daydon Jackson, are as usual excellent. The Additions and Donations to the Library are numerous and excellently catalogued. W. C. Worsdell was elected A.L.S. in December. Fascicled specimens of Ash and Horse Chestnut from Elton, Hunts, were shown by J. W. Bodger. Dr R. W. T. Gunther exhibited rotographs of unpublished letters of John Ray written to John Aubrey and Dr Edvard Lhwyd. T. A. Sprague gave an account of Brunfels as a botanist. S. K. Mukerji gave an account of the Biological Relations of *Mercurialis perennis*. He has named a strongly toothed form var. *Salisburyana*.

LINNEAN SOCIETY JOURNAL, December 23, 1927, contains a description of the Swiss National Park which is situate in the Lower Engadine. This was the Hooker Lecture of 1926 already mentioned.

LINNEENNE SOCIETE DE LA SEINE MARITIME. Plantes des Iles Kerguelen, 126, 1926.

LONDON UNIVERSITY COLLEGE. An Outline of the History of the Botanical Department. pp. 23, 1927; 2 6. This was issued by the Department on the occasion of the Centenary of the College in June 1927. It states that there have been only three Professors of Botany during the period—John Lindley, 1828-1860; Daniel Oliver, 1860-88; F. W. Oliver, 1888 -. There is a short but pleasing account of Lindley and a more complete biography of Daniel Oliver. Allusion is made to Blakeney Point, the botanical ecology of which has been so intensively developed under Prof. F. W. Oliver.

MACGILL AND SMITH. Research Annual, 1927. Plant Breeding, J. Watson. A Visit to some American Farms, H. F. Smith. In an article on Grasses, it is said that *Dactylis glomerata* is one of the most important of all. In Welsh station trials it yielded the heaviest crop of all grasses—15,949 pounds green weight per acre. Next to it come Timothy and *Phleum pratense*.

Marlborough College, Natural History Society Report to Christmas 1926, No. 75. Edited by L. G. Peirson. C. P. Hurst contributes a paper on Fungi and there is a list of plant-galls found in 1926. Several mosses are recorded but no additions to the County Flora are made.

Marie-Victorin, Fr. Notes pour servir à l'Histoire de notre Connaissance sur les Abietacées du Quebec, in Trans. Bot. Soc. Can. 437, 1860. Nouvelles Etudes sur les Composées de Quebec, *l.c.* 461-482, 1927. Gives clear distinctions how to separate *Solidago canadensis* from *S. altissima* L., with an account of the hybrid. Also describes hybrids of *Aster paniculatus* and *cordifolius*, and *novae-angliae* and *paniculatus*, with figures. Notes sur quelques Cas de Tératologie Végétale. 427-433. 1926. In *Acer*, *Salix* and *Iris*. Les Equisetinées de Quebec in Cont. Lab. Bot. Univ. Montreal, n. 9, pp. 137, 1927. It contains an Introduction, general Taxonomy, and Description of the Quebec species and their varieties, all of them being British save *E. scirpioides*. There are 20 illustrations. A remarkable variety, *americanum*, is described under *E. palustre*. The question of the hybridisation of *E. litorale*, the author leaves unsettled. He gives reasons for and against and holds it is an open question. A good clavis is appended. The monograph is a valuable addition to the literature of this genus. Les Gymnospermes de Quebec, *l.c.*, n. 10, pp. 147, 1927. Five genera of Abietaceae, two of *Juniperus*, *Thuja*, *Cupressus* and *Taxus* are included, thirteen native species being well described with their varieties, synonyms, habitats, distribution and history. This again is a very commendable addition to the Flora of Quebec. There are also useful illustrations.

Maire, R. Contribution à la Flore d'Afrique du Nord. Mem. Soc. Sc. Nat. Maroc. 1926.

Martin, L. H. The Hydrion Concentration of Plant Tissues, III. The Tissues of *Helianthus annuus*. See Protoplasma 32, 1927, and (IV.) 522, 1927.

Merrill, Elmer D. An Enumeration of Philippine Flowering Plants. Manila, 1922-6.

Millais, J. G. Magnolias. pp. 252 with 10 collotype plates and 30 half-tone plates. Longmans, Green & Co., 1927; 32/-. Horticulturists are already under a deep debt of gratitude to Mr Millais for his two sumptuous volumes on the Rhododendrons which were remarkable not only for the beautiful illustrations but for the useful text. Now from the same pen we have a standard work on the Magnolia beautifully printed and with many remarkably good illustrations. He says the Magnolias are amongst the most ancient shrubs and trees in the world, dating back to the earliest arrival of plant life. The present members are mere remnants of a very extensive group of north temperate forest trees. Hutchinson regards *Pterocarpa* as a type almost as ancient as the *Gingko*. In early times it probably had a similar distribution and fossil remains of Magnolias are common in Tertiary strata of the Northern Hemisphere. Linneaus gave the name Magnolia in honour of Pierre Magnol, who was director of the botanic garden at Montpellier from 1638-1715. Ornamental as the Magnolias are, they are, says Mr Millais, not so popular as they should be. There is not one that is not worthy of cultivation. Those who are forming gardens should always give them first consideration, when planting. Most of the deciduous kinds are hardy as far north as Yorkshire and some even flourish in Wales or the coldest parts of Scotland. A key by Mr J. E. Dandy is given which helps to discriminate the species. Valuable hints as to propagation and other details of culture are given. Forty-five species are described and numerous varieties and hybrids. One of the earliest to be introduced from North America was *M. glauca*. In the Botanical Garden Herbarium at Oxford is a specimen of *M. grandiflora* from Carolina. *Laurus tulipifera Carolinensis sempervirens, foliis laurinis amplissimus digitatis, flore maximo albo*. This appears to have been sent to the Right Rev. the Bishop of London by favour of Captain Cook. Another sheet from Carolina is dated 1722. This is a very showy North American species. It has flowers 12 inches across. The handsomest species of the genus to my thinking is the Nepalese-Himalayan *M. Campbellii* which is gloriously depicted on plate 4 in Hooker's "Himalayan Plants." It is a tree attaining a height of 80 to 150 feet. It was discovered by Dr Griffith in Bhotan. It has a profuse show of sweet scented pink or rosy flowers shaded with crimson, 6-10 inches across. Unfortunately it flowers too early to stand a chance in England and it takes 25 to 30 years before it flowers. In Cornwall recently it has been raised from seed and there are trees 40 feet high at Leonards Leo and at South Lodge, Horsham. The former has yielded good flowers, and at Bosahan a tree bore 400 blooms when it was 53 years old. There is a specimen at Westonbirt over 30 feet high, but as yet it has not flowered although under the shelter of a wall. Horticulture must be grateful to Mr Millais for the production of this eminently useful monograph. That it will do much to popularise such showy and handsome trees and shrubs is pretty certain and their more frequent occurrence through Britain will be all to the good. The author and publishers are greatly to be congratulated upon the production of so handsome a volume.

Murr, Dr Josef. Meine Phanerogamen-Bastarde, in Viert. Jahrschr. Landes Voralb. 185, 1926. Includes *Luzula Vinesii* (*flavescens* × *pilosa*) in honour of the Sherardian Professor at Oxford, from Innsbruck; *Salix Poelliana* (*Arbuscula* × *aurita*); *Chenopodium Bor-*

basii (*album* × *opulifolium*); *C. Zahnii* Murr (*album* × *ficifolium*); *C. tridentinum* Murr (*opulifolium* × *striatum*); *C. subcuneatum* Murr (*album* × *Zchackei*), England; *C. platyphyllum* Issler; *C. Haywardiae* Murr in *Rep. B.E.C.* 334, 1913, and 19, 1914, Scotland, Switzerland; *C. auricomiforme* Murr & Thell. (*album* × *auricomum*); *C. subpalmatum* Murr (*album* × *atriplicis*) in *Rep. B.E.C.* 780, 1925, Druce & Brown, Colchester; *C. Drucei* Murr (*album* × *striatum* × *Zschackei*) Schutt in Tosters; *C. Schulzeanum* Murr (*glaucum* × *rubrum*), Jena.

Murr, Dr Josef. Vegetabionsbilder aus dem Furstenthum Leichtenstein. pp. 65, 1927. Dornbirn. Includes notes of many interesting violets. A figure of his hybrid *Juncoides (Luzula)—Johannis-principis*, is given with a long description.

Nature. Edited by Sir R. Gregory. Weekly, 1/-. Macmillan & Co., St Martin's Street, London, W.C. Melanism in Lepidoptera is treated of by our valued member, Dr Heslop Harrison (127, 1927), and he gives examples as to its increase in our manufacturing areas. This he attributes to the mineral deposits, manganese, iron, etc., in the foliage which is the food-material of the larvae. He found, by experiments which he details, that melanism, whether induced or natural, is always a Mendelian dominant and further research showed that the metal is the inciting agent. The results demonstrate without any possibility of contradiction that the germplasm can be influenced by external agencies—and this lends weighty support to Lamarckian views. The experiments "provide the principle new in evolution that food not normal to any given organism may so affect its germplasm as to give rise to heritable variations. That being granted, we see at once how a change in habitat can originate new forms and finally new species. In no group of organisms would this be more potent than in plants and thus . . . we can conceive of their origin in stations in which they now exist." On p. 153 a delightful tribute is paid to our late member, Dr Carl Schroeter, in the review written by Prof. R. Yapp. On p. 250 it is announced that the Botanical Library of Capt. John Downel Smith of Baltimore, consisting of 1600 volumes, and the plant collection of more than 100,000 specimens is now in the possession of the Smithsonian Institution of Washington. (See also 388, 562, 564, 1927). p. 254. The grass, *Distichlis spicata*, to which class O. E. Meinzer (Journ. Wash. Ac. Sc. Vol. 16, n. 21, 1926) gives the name phreatophytes, indicates water 8-12 feet below the surface and the mesquite, *Prosopis juliflora*, can reach water 50 feet below the surface. On p. 508 an account is given of the Botany School of the University of Sydney. Its Museum bears the names of Bentham and Hooker and its Herbarium that of John Ray. The Advanced Laboratory is called Charles Darwin. The first year's Laboratory commemorates that pioneer in Australian Botany, Sir Joseph Banks, and the Research Laboratory is called Robert Brown who, with Banks, had the honour of being the earliest delineator of Australian Botany. The building, which is exceedingly fine and well constructed, owed much to Prof. Anstruther Lawson recently nominated Fellow of the Royal Society who died so very soon after the establishment had been opened. p. 228. Dr A. E. Clark Kennedy gives an excellent paper on Stephen Hales, Physiologist and Botanist, 1677-1761. It will be remembered that Hales was a pioneer in the scientific investigation of the flow of the sap in plants and trees. He also did excellent work on the ventilation of ships and due to him forced ventilations were instituted in many of the prisons of England then rampant with gaol-fever. He received the Copley medal of the Royal Society and was one of the eight foreign members of the Royal Academy of Science in Paris. He was a member of Corpus Christi College, Cambridge, and a parish priest at Teddington. There is a monument to him in Westminster Abbey, but his published works are in themselves an enduring memorial of his scientific powers which Dr Clark Kennedy has done justice to in this very readable eulogium.

New Phytologist. Edited by A. G. Tansley, F.R.S. 25/- yearly. Published quarterly. An article by Dr Drabble is treated of under the author's name.

North Western Naturalist. Edited by A. A. Dallman, F.C.S. Ann. Sub. 7/6. Issued quarterly. An excellently edited Naturalists' Journal, it includes Aspects of Algerian and Tunisian Botany by Annie Lee; Lichens of the Isle of Man, by J. W. Hartley and J. A. Wheldon; Report on Plant Galls by W. Falconer, F.E.S.; and Cumberland Mosses by J. Murray. The accounts of the meetings of the various Natural History Societies are commendably complete. The Reviews are good, but there does not appear to be any notice of our Reports.

Oliver, Prof. F. W., F.R.S. Nature Reserves in Trans. Norf. & Norwich Naturalists' Society, xii., 317, 1927. Portuguese Sand Dunes, 279, 1926-7.

Ostenfeld, C. H. Flowering Plants and Ferns from North Western Greenland, collected during the Jubilee Expedition of 1920-22 with Remarks on the Phyto-geography of North Greenland. 97 species are enumerated. *Taraxacum hyparcticum* has all shades of colour from nearly white to rich or deep yellow.

Ostenfeld, C. H. The Flora of Greenland and its Origin. Der Kgl. Danske Videns. Selsk. Biol. Medd. vi., 3, 1926. No one more capable could be found for preparing this work than Prof. Ostenfeld. He believes that one-eighth of the 390 species of the Greenland vascular plants were brought into the country through the old Norse colonisation and he gives the names of the plants. He thinks *Rubus Chamaemorus* may have been brought by birds from arctic America. The west coast is far more rich in species than the east coast, and this bears out the possible introduction of most species by the Norsemen. Two species are, however, known only on the east coast, *Sedum acre* and *Alchemilla* *acutidens.* These may have immigrated from Iceland. The east coast has only 9 species peculiar to itself whereas the west coast has 134. North Greenland is very poor in species, 125 in all, but 8 are not found elsewhere and are naturally high arctic species. *Minuartia Rossii* and *Braya Thorild-Wulffii*, the last-named after that martyr to discovery, must be supposed to have immigrated from the west by Ellesmere Land and have found their way northward round Greenland and down the east coast to about 60° N. Lat. There are eight endemic species—*Braya Thorild-Wulffii*, *Taraxacum arctogenium*, *Potamogeton groenlandicus*, *Antennaria intermedia*, *Hieracium groenlandicum*, *H. lurido-rubens*, *H. rigorosum* and *H. hyparcticum*. The last, if correctly identified, has been recorded from two places in Scotland. Three of the four Hieracia are not recorded for America, and it is only recently that Prof. Fernald discovered *H. groenlandicum* in Newfoundland. The relationship of the Greenland flora is more closely American than European.

PEROLD, A. I., B.A., D.Phil. A TREATISE ON VITICULTURE. pp. 696. Macmillan & Co. London, 1927; 25/-. Dr Perold of Stellenbosch, S. Africa, has done great service to Vine-growers in our dominions of Australia and South Africa, as well as to those who live in California, since there is no other work in English which embraces the whole subject and we may say none in any language that is more thorough and exhaustive. Unfortunately in Britain, whether from climatic or other reasons, the few varieties of the grape which once ripened their fruits out of doors are diminished greatly in number so to a great extent this is a sealed book to English Horticulturists. This volume is intended however, to serve the student as well as the practical grape-grower, since there are chapters dealing with the biology, the external and internal morphology and the theory of grafting (known since the time of Theophrastus) of the Vine. There are fourteen chapters, a very good bibliography of seven pages with 132 items, an alphabetical list of grape species and varieties taking six pages, and a general index. The general introduction treats of the origin of modern Viticulture; the geographical distribution of the vine; the influences of climate, latitude, altitude and large masses of water, and the nature and constituents of the soil. Remains of fossil vines and grape seeds show that in the Tertiary period the vine flourished over a great part of Europe and even in Greenland, Iceland, North America and Japan. Later, during the Ice Age, it was driven southwards but afterwards it regained its own and spread over a large area. The Fossil grape-vines of prehistoric times, V. *teutonica*, found in Germany, V. *islandica* in Iceland, etc., resemble in outward appearance the North American, V. *cordifolia*, rather than the European V. *vinifera*. This latter, however, occurs with fossil plants of prehistoric age near Montpellier. In Egypt vine-culture goes back 5000 to 6000 years. In Palestine it is of ancient origin as also in Greece, but it was not till the advent of the Christian Era that Italian vines began to acquire a reputation. To France it was probably introduced by the Ionian Greeks near Marseilles, thence it spread up the Rhone Valley. Under the Roman conquerors, in the second century, wine making spread along the Rhine. In South Africa Viticulture as an important industry is limited to the south-western districts—the winter rain-fall area—which includes the Cape and there is a large and increasing yield of grapes for exportation. The first vines were brought to the Cape in 1655 by Jan van Riebeeck, the Commander. They included the Muscat of Alexandria, Muscatel and Stein. The culture was greatly stimulated by the French Huguenots, many of whom came from the south of France. In California the grape chiefly grown is *V. vinifera* and its varieties, the Pacific Slopes being the great home of the industry. In Eastern America *V. vinifera* is not successful so that native varieties and crosses of the Labrusca Vines are the ones grown. This, too, is the case with the Ontario grape region of Canada. The Central Lake Region of New York, as at Catawba and Delaware, forms the third largest grape growing area. In Australia the industry is most successful in the states of Victoria and South Australia. It was started in 1814 by Gregory. Bushby introduced 514 varieties into New South Wales about 1831. The influence of climate is so important in Viticulture that the author has given great attention to the subject. He shows that the proximity of the sea or of large areas of water has an inimical effect on the ripening of the grape. Grapes can be best grown on deep, cool, well drained, dark-coloured soils. Lime soils are most productive, 17 tons of grapes per acre being grown. In the Cape practically the whole of the Sultana crop is produced out there, and the grapes give fine sweet muscatel wines. Ten genera of the Vitaceae are given by Planchon but only *Vitis* gives useful crops. Some species of *Ampelocissus*, which have bunches of ten pounds weight afford a poor wine of weak alcoholic strength. Viala divides *Vitis* into 32 species. The varieties and the reasons for making them are given in great detail. The propagation of the Vine and, in connection with that, grafting is thoroughly done. Vine diseases are also exhaustively described. The great insect pest, *Phylloxera*, was discovered in the United States by Fitch in 1854. It was first named *Pamphigus Vitifolii*. It is a gall-insect and its winged form in 1867 was named *Dactylospora Vitifolii*. Our Oxford Entomological Professor, Professor Westwood, found it in the leaf-galls and roots and in 1867 called it *Peritymbia Vitisana*. In 1868 Planchon saw the winged insect formed out of the root form and called it *Phylloxera vastatrix*. This is the pest which nearly destroyed the European vineyards. Methods for its destruction are given. Chapters are devoted to detailed methods of culture and preparation for the market. The products of the Vine, including alcoholic vinegar, are mentioned and their methods of preparation detailed. Greece is still the main producer of currants, up to 135,000 tons being annually obtained.

PRESLIA. Report of the Czecho Slovak Botanical Society, 1926. Contains, p. 37, Ad Florae Serbiae Cognitionem additamentum primum by F. A. Novak of Prag. This includes the Equisetaceae and Filices with some excellent illustrations of the varieties of *Asplenium Adiantum-nigrum*.

Pugsley, H. W., B.A. Further Notes on the Genera *Fumaria* and *Rupicapnos* in Journ. Linn. Soc. 427, 1927. *F. Caroliana* is a new species found between Arras and Maroeuil in North France and *Rupicapnos gaetula* is a new species from Djebel Grouz in Algeria.

Quarfort, S. Adventive Plants, Stockholm, in Svensk Bot. Tids. xxi., 171, 1927.

Read, B. E., Ph.D., & J. C. Liu, M.S. Flora Sinensis. Ser. A. Vol. i. Plantae Medicinalis Sinensis. pp. 106, 1927. Peking. This is the Bibliography of Chinese Medicinal Plants from the pen of Ts'ao Kang Mu, 1596 A.D. 868 plants are enumerated and are classified into Families on the Engler system! But they start with the Composites and end with Filices. There is a Chinese index as well as a botanical one including English names. Copious references are given and the constituents of the drugs are often mentioned.

Rehder, Alfred. Manual of Cultivated Trees and Shrubs Hardy in North America, Exclusive of the Sub-tropical and Warmer Temperate Regions. pp. xxxvii., 930. Macmillan & Co., New York, 1927; 42/-. This extremely useful volume is dedicated to Charles Sprague Sargent, LL.D., with whom the author worked in the Arnold Arboretum, "as a token of admiration and gratitude." "The arrangement," as the author says in his terse yet comprehensive Introduction, "is very much the same as that of the Manual of the Spontaneous Flora of that region to which it may serve as a supplement and companion dealing with the cultivated ligneous flora which in an ever-increasing way is going to supply economic and esthetic wants and to modify thereby greatly the aspect of the original vegetation wherever man is making his home." The term, Trees and Shrubs, is here taken in a wide sense so as to include not only woody vines but also suffruticose plants. The work, therefore, is very comprehensive including plants belonging to 112 families, 468 genera, 2350 species, with 2465 varieties. In addition there are 1 family, 30 genera, 1265 species and 507 hybrids which are briefly mentioned under their nearest allies. Engler's arrangement is followed as well as the International Rules. He, however, uses special generic names for intergeneric hybrids and his "var." signifies any sub-division below the species regardless of whether it was originally described "as a sub-species, variety, forma, lusus, etc." There is much to be said in favour of this commonsense plan for like the stars these grades differ from one another in glory. The plan is convenient and if its author's name is put in brackets when the grade is other than that of a variety the object is gained without making a man say what he has not said. The abbreviations for the sake of space are extremely brief—too brief indeed. L.A. means Loudon's Arboretum, and W.R., Miss E. Willmott's Roses, but four pages are used to explain them.

There is an excellent Synopsis of the Orders and Families as well as an Analytical Key to the Families and Aberrant Genera. Then follows the text proper which includes a clear description of the species, its varieties and synonyms, with figures. Under *Ulmus*, *U. glabra* Huds., with its hybrid *U. hollandica* is given. The name *U. procera* Salisb. is used for the English Elm, while *U. foliacea* Gilib. is employed for *U. glabra* Mill. = *U. nitens* Moench. Under this is put *Wheatleyi* = *sarniensis* Lodd. and *stricta* (Lindl.), but it is doubtful if his *U. minor* Moss (ascribed to Miller) is correctly identified. I hold that *U. minor* Mill. is *U. stricta* Lindl. Rehder's description does not appear to fit either my *Plotii* or Lindley's *stricta*. *Populus serotina* Hartig is placed under *P. canadensis* Moench, itself a hybrid of *balsamifera* and *nigra*, the latter an introduced tree in the U.S.A. before 1800. *Pyracantha* is kept as a distinct genus although *Coccinea* has a misprint for *C.* instead of *P.* *Crataegus Oxyacantha* = *Oxyacanthoides*. The var. *pteridifolia* of *monogyna* is wrongly attributed to Rehder. The hybrid of the two species is given as *C. media* Bechst. *Sorbus* is retained as distinct as is *Malus*. *Rubus* has 52 species. We are glad to see he puts the Sweet Brier as *R. Eglanteria*. *Amygdalus* is a section of *Prunus*. *Ampelopsis* is kept distinct from *Vitis*. The Virginian Creeper is put as *Parthenocissus quinquefolia* but does not *P. hederacea* (L.) Dr. retain the oldest trivial? *Lycium chinense* differs, it is said, from *L. halmifolium* in the corolla tube being shorter than the limb and in the broader leaves—rhombic-ovate to ovate-lanceolate, while *halmifolia* has the corolla tube longer than the limb and narrowed below the middle, while the leaves are usually lanceolate. There is a very useful glossary and the index is comprehensive. The work is well printed and the type skilfully chosen. The equivalents of the Metric measurements need correction—a millimetre is not a quarter of an inch. The author and publishers are alike to be congratulated upon so pleasing and valuable a contribution to Dendrology.

Reynolds, Miss K. M., 8 Darnley Road, Notting Hill, London, W.11. Flowers of the Holy Land. Parts 1 and 2, 2/- each. These little works give some very vivid and accurate paintings of ten of the Spring and Summer flowers of that wonderful district which has a flora of 3500 species.

Rilstone, Francis. Cornish Rubi. pp. 269-280. Royal Institution of Cornwall, 1927. Our member has given in these pages an amended and greatly extended account of the Cornish Rubi. Many interesting species are included. So far, *R. nemoralis*, var. *cornubiensis* R. & R., it is stated, has not been found in Devon though one of the most widespread and characteristic of Cornish Brambles.

Rohde, Eleanor Sinclair. Garden Craft in the Bible and other Essays. pp. 242, with 24 illustrations in half-tone. Herbert Jenkins, Ltd., London, 1927; 10/6. This well printed and aptly illustrated work will give pleasure to many lovers of gardens as scattered through the pages there is much information which it would take long research to obtain from original sources. The garden-craft, as shown in the pages of Holy Writ, is given at some length, and next the Gardens of the Pharaohs are described. The more one learns of the life of the Egyptians the more one is astonished at their advanced culture. Their gardens were formal and contained trees for shade and for fruit-bearing. They were well irrigated. Vines were, of course, grown, and one saw recently in an alabaster vase of early date the dried up remains of the wine it once contained. There are paintings extant showing the introduction of Frankincense into Egypt. Thirty-one trees yielding this incense resin were uprooted from the Land of Punt and brought back with the earth round their roots to Karnak. Chapter 3 deals with the traditional influence of the gardens of the East and there is a beautiful picture of Shah Jehan riding in his garden. The authoress thinks that it is at least probable that the garden carpets were the original of all carpet decorations. The chess-board arrangement of the beds in mediæval gardens is a curious instance of the force of tradition. In Chapter 4 the Mediæval Garden is illustrated by a beautiful page from the Book of Hours of Isabella of Portugal. In these gardens a solitary tree—a pine tree in the Chanson de Roland—was a marked feature. Many other examples are cited, not the least curious being the Mediæval Castle Garden from the Romance of Regnaud de Montauban. The contemporary description of the Duke of Buckingham's wonderful garden at Thornbury is given at length. Chapter v. is headed "Monastic Gardens and Gardeners" and an example of a rock garden is shown, belonging to the Thebaida Monks, in a picture now in the Uffizi Gallery. Mediæval Flower Symbolism is descanted on in Chapter vi. and there are illustrations of the Virgin in the Rose Garden and the Mary Garden with its carnations and iris—the royal lily referring to the ancestry of the Virgin—of the Royal House of David. Botticelli is said to have been the first to use the Daisy to symbolise the innocence of the Holy Child. The Elizabethan Garden is treated of in Chapter vii. At that period topiary work was fashionable although severely condemned by Bacon, and this was the period for fountains and ponds "fair receipts for water," as they were euphemistically called. Wilton was famous for its "foure fountains with statues of marble in their middle" the garden being a "thousand foot long and about four hundred in breadth" and there were "arbors 300 foot long and diverse allies." Chapter viii. is devoted to William Lawson, the Izaak Walton of Gardening writers; chapter ix. to Queen Anne Gardens and early Eighteenth Century Gardening Books; chapter x. to the Old Bee Book; chapter xi. to the Making of a Herb Garden—a delightful employment which gives much scope for research and for original treatment; chapter xii. to the Mistletoe Bough and its legends; chapter xiii. to Oxford Gardens—Merton, the home of Queen Henrietta; Lincoln, celebrated for its vine dating from the 15th century and All Souls. John Goodyer is said to have been at Oxford during the Civil Wars but there is no evidence of his being much there save as a visitor. Then there are the gardens of the New College; Pembroke College, which existed up to the nineteenth century, and in which Johnson played at draughts with John Fludyer; Wadham and St John's. There is a little confusion in the authoress's account of the Botanic Gardens. Morison, the Regius Professor, was not a successor to Jacob Bobart, the latter being only *horti praefectus*. Nor are the niches in the gateway now empty. They are still occupied with the statues of Charles I., Charles II., and the Earl of Danby. They owe their origin to a fine inflicted on Aubrey Wood for libelling the Earl of Clarendon, and that fine was used to pay for the carvings of the statues. The two last chapters are entitled The College Gardens, Garden Music and the Charm of the Sundial. Purchasers of this pleasing volume will find much in it to interest and instruct.

SANDERS, EDMUND. A BIRD BOOK FOR THE POCKET. pp. 246 with over 200 coloured plates. Oxford University Press, 1927; 7/6. This delightful little volume, although nothing to do with our subject, should not remain unnoticed because it has several unusual things to recommend it—its compactness, 6 × 4¼ in.; its weight, 12 ounces; its, on the whole, extraordinary realistic colouring obtained by a colour process on unglazed and light paper, and its terse yet apposite descriptions. To produce such a volume at so low a price seems an impossibility. There are also many beautifully coloured illustrations of Birds' Eggs of the natural size. The nomenclature is mainly that adopted by the British Ornithological Union. The small birds are on a half scale and large birds on a one-fifth scale. There is an excellent introduction. We hope a similar work on our wild flowers may be equally well produced.

SAYRE, JASPER D. Physiology of the Stomata of *Rumex Patientia* in Ohio Nat. 233, 1926.

SCHAFFNER, J. H. Observations on the Grasslands of the Central United States in Ohio State Univ. Studies, n. 175, 1926. The author has had wide experience with the subject on which he writes so ably. He gives the constituents of the true or *Andropogon* prairie in which such plants as *Artemisia Ludoviciana*, *Grindelia squarrosa*, *Ratibida columnaris*, *Laciniaria punctata*, *Psosalea floribunda* and *Salvia Pilcheri* form a part in the western area but thin out or disappear in the east. He gives the characteristic species found in S.W. Illinois. Of the typical central prairies *Andropogon furcatus* is the dominant grass with its associate *Sorghastrum nutans*. *A. scoparius* is abundant on the drier and *Panicum virgatum* more frequent on the damper soils. Other plants are *Baptisia bracteata*, *Meibomia illinoensis*, *Psoralea floribunda*, *Amorpha canescens*, *Acuan illinoensis*, *Petalostemon purpureum*, *P. candidum*, *Silphium laciniatum*, *S. integrifolium*, *Helianthus scaberrimus*, etc. The vegetation in the clay county, Kansas, the Sloughs, Sand Hill Flora and Salt Marshes is also given, with some good photographs. The formations may be grouped into—1, Forest Formations of Oak-Hickory and Oak; 2, Prairie or Tall Grass Formation; and 3, Plain or Short Grass Formation.

Schaffner, J. H. The Change of Opposite to Alternate Phyllotaxy and Repeated Rejuvenations in Hemp by means of Changed Photoperiodicity, in Ohio Journ. Sc., 1927. Sex-limited Characters and Allosome-linked Heredity, *l.c.* 105, 1927. Siamese Twins of *Arisaema triphyllum* in opposite sex experimentally induced, *l.c.* 276, 1926. An undescribed Equisetum from Kansas—*E. Kanzanum* Schffn., in Ohio Nat., November 1912. Sex and Sex-determination in the Light of Observations and Experiments in Diaecious Plants, *l.c.* 319, 1927.

Schinz, Hans, & Albert Thellung. Weitere Beitrage zur Nomenklatur der Schweizerflora (xi.). Nat. Gesel. Zurich 72, 206, 1927. They consider Sprague's suggestions of Nomina Conservanda and suggest *Laser* Borkh. 1795 vice *Siler trilobum* Crantz and *Cephalaria* Schrad. vice *Lepicephalus* Lag. They suggest *Potamogeton oblongus* Viv. Ann. Bot. 1-2, 162, 1804, should be used instead of *P. polygonifolius* Pourret, since the original material of Pourret at Madrid is *P. alpinus* Balb. *Salix incana* Schrank, 1789, should be replaced by *S. Elaeagnos* Scop. Fl. Carn. ed. 2, ii., 257, 1772. *Stellaria Alsine* Grimm in Nova Acta Phys. Med. Nat. Cur. 17, 313, 1767, precedes *S. uliginosa* Murray Prod. Stirp. Gott. 55, 1770. They retain *Delphinium Ajacis* L. in the sense of our List. *Ranunculus obtusiflorus* (S. F. Gray) Moss in Journ. Bot. 117, 1914 is used for *Baudotii*. *Viola intermedia* Reichb. Ic. Pl. Crit. vii., 3, 1829 = *V. Riviniana* × *sylvestris* – *nemorosa* Neuman, Wahlst. & Murb. *V. persicifolia* Roth = *V. stagnina* Kit. *Chaerefolium* Haller Hist. St Helv. i., 327, 1768, is used for *Cerefolium* Hall. and *Anthriscus* Pers. *Apium tenuifolium* (Moench) Thell. replaces *A. leptophyllum* F. v. Muell. = *A. Ammi* Urban (*Cnidium tenuifolium* Moench). They still use *Veronica Tournefortii* Gmel. *Digitalis grandiflora* Miller, 1768, replaces *D. ambigua* Murray Prod. Stirp. Gott. 62, 1770.

Setchell, William Albert. Phytogeographical Notes on Tahiti; Land Vegetation, Marine Vegetation. Univ. Calif. Public. 240-334, 1926. The highest mountain in Tahiti—a double island, 17° south lat., 149° west long. in the Society group—is 7321 feet. The island is about 20 miles long and 10 miles wide at its greatest width. It has an area of about 350 square miles. The rainfall is over 80 inches a year. *Hibiscus rosa-sinensis* is one of its conspicuous flowers but there are *Allamanda*, *Bougainvillea*, *Cestrum*, *Ixora*, *Acalyphae*, *Crinum*, *Eucharis*, *Gomphrena* and *Corculum*, an attractive herbaceous climber, to help the brave show of blossom. Above 5000 feet *Lycopodium cernuum* and *L. volubile* are common features. *Fitchia nutans*, a tree Composite with a trunk 9 inches in diameter, growing at about 4000 feet, was found by Moseley in 1885. The flora is made up, according to Nadeau in 1873, of 289 Spermatophytes, 127 Pteridophytes and 91 Bryophytes. The estimate, as given by Setchell, is 330 Spermatophytes and 158 Pteridophytes, of which about 9 per cent. (144) are endemic. There is much ground unworked. The question of Dispersal is well gone into and the author thinks that the land flora of Tahiti is simple and indicates comparative youth. Two main sources seem to have supplied its constituents—southern latitude, probably from the Tertiary flora of the Antarctic and western latitude, overwhelmingly Indo-Malayan. There are 149 species of marine algae.

SHERRIN, WILLIAM ROBERT, A.L.S. AN ILLUSTRATED HANDBOOK OF THE BRITISH SPHAGNA, with Foreword by H. N. Dixon. pp. 74, tt. viii. Taylor & Francis, London, 1927; 6/-. Since Mr Horrell's European "Sphagnaceae" is out of print and the Warnstorfian system has nearly ousted Braithwaite's work the appearance of this well arranged, well printed and aptly illustrated work will be welcomed by Bryologists. As Mr H. N. Dixon in the Foreword says "The keys and the full and careful descriptions, together with the figures, each illustrating some main feature of the species, will be found eminently helpful—their special value lying in the fact that they are in every case based on Mr Sherrin's own observations of the plants themselves." The localities and distribution of the species are given.

SHIPLEY, Sir ARTHUR E., G.B.E., F.R.S. Hunting under the Microscope. Edited by C. F. A. Martin, M.A. pp. 184 with portrait. E. Benn, Ltd., London, 1927; 8/6. This work lies outside our purview, yet one feels that it is only doing justice to a fellow-worker in science who did much to popularise the unpopular and who, from the placid, if not quiescent domain of a College Don, looked deep into the common things about him and from them drew much inspiration which enabled him to send a ripple of enquiry even into the fashionable lagoons of Society. As his Editor says, "he had a singular gift for picking out the essential principles and for explaining them to the lay man." Curiously enough in this charming little volume Sir Arthur begins by describing an animalcule known as *Tardigrade*—what an appropriate name for a head, I will not say, of an Oxford College. As he remarks, they live remote from the world, remote from worldly cares—but they are very small—the Tardigrades I mean—one-third of a millimetre in length, some of them "looking like sucking pigs in plate armour so fat that you feel inclined to pat them." But there the similitude stops. Who ever wanted, even in Wonderland, to pat a college head, certainly not one belonging to the older university. In graphic terms, Sir Arthur describes the Nematodes, those parasites of parasites, and the snails and slugs, those toothsome morsels to our gallic and nepalese friends, who, the snails and slugs I mean, before they go into their winter sleep feed up. It is at that period of luscious fatness that their attraction to the gourmand is most pronounced. This opens out delightful chapters on hibernation. One might of course enter into a discussion as to how long was the hibernation of a College Don of the olden times. The Carp, a native of Persia, was introduced in the middle of the thirteenth century into Europe, and was known in Britain in the fifteenth century. Somewhat like the Trinidad delicacy, which entombs itself in summer, it buries itself in the mud during winter time. Hibernation or resting stages, it is said, can be exercised at will, and it is this power which enables a fakir to throw himself into a trance which may last as long as six weeks, during which time no food is taken. The extraordinary case of Colonel Townsend is given to show that this power is not confined to the Hindoo. In easy and delightful language Sir Arthur shows the inner meaning of hidden things in smallest guise so that chapters on Rotifers and Cyclops are easily assimilated. One wishes once again to be a budding microscopist enthusiast who watches with an eager eye when urchins scratch their heads in order to find fresh fish for his net, or rather an object for his slide. Excellent are the accounts of the Larvae and Pupae of Mosquitoes, and the epic incident of the discovery by Ronald Ross of the malarial organism. An eloquent tribute is paid to that devotee of science. Would that Sir Arthur could have lived to have given us an equally vivifying stimulant to botanical research, which assuredly would not have been with an eye at the end of a tube.

SIM, T. R., D.Sc., etc. Check List of the Bryophyta of S. Africa. Edition 2, pp. 32. Times Printing and Publishing Co., Chancery Lane, Pietermaritzburg, Natal, 1927; 1/6. Clearly printed it contains 670 species under 54 families and 224 genera. Some Effects of Man's Influence on the South African Flora, in S. Afr. Journ. of Science, December 1926. A very readable and suggestive paper. These works are by Dr Sim, the gatherer of *Botrychium Matricariae* in Kincardineshire.

SMALL, JAMES. The Hydrion Concentration of Plant Tissues, in Protoplasma 324, 1926. With M. W. REA. Flowering and other Stems, *l.c.* 334, 1926.

SOMERVILLE, Sir WILLIAM, K.B.E. HOW A TREE GROWS. pp. 212 with 112 text figures. Oxford University Press, 1927; 10/-. We heartily congratulate our Life Member on the completion of this well written and well printed text-book. It is the expansion of some notes of lectures given to Forestry undergraduates in Oxford. The author has always been a stimulating force in any department of work which he has taken up and both Forestry and Agriculture, not to say Rock-gardening, are indebted to him. In addition to the ordinary chapters on structure and life history, one is added on the Identification of Timbers. Figures of sections are given of Ash, Elm, Robinia, Oak, Spanish Chestnut, Cherry, Walnut, Plane, Beech, Hornbeam, Hazel, Alder, Sycamore, Lime, Holly, Apple, Birch, Horse Chestnut and Willow, and some others are described in the key. The coniferous timbers are also similarly treated. The book supplies a want to students and it will prove useful to those who are neither foresters nor undergraduates.

STEFANOFF, B. Monograph na roda Colchicum L., in Sborn. na Bulg. Akad. na Nauk., xxii., 1926.

STEP, EDWARD, F.L.S. HERBS OF HEALING. pp. 206, tt. 76, from photographs by the author. Hutchinson, London, 1927; 10/6. The author "has taken the herbs that possess acknowledged curative powers and those that have been reputed medicinal: distinguishing the true from the false and enabling the reader, by clear, non-technical descriptions and many photographs to identify them with ease." The photographs are quite charming and such plants as Sea Holly, Bear's-foot, Setterwort, Field Poppy, Sweet Violet, Common Mallow, Wood Sorrel, Purple Loosestrife. *Sedum acre*, *Sambucus*, the Daisy, *Atropa*, Henbane, White Dead-Nettle, and Juniper are beautifully reproduced. In others, and one realises the difficulties of plant photography, there is too much massing so that it is less easy to make out the individual flowers. One wishes that capitals had been used for those specific names which need them, e.g. *Atropa Belladonna*, *Solidago Virgaurea*, etc. *Erythraea* is still wrongly employed instead of *Centaurium*, but in this error the author is in a good but, one trusts, diminishing company.

SWANSEA SCIENTIFIC AND FIELD NATURALISTS' SOCIETY REPORT, edited by A. E. Trueman, D.Sc. Our valued contributor, Mr J. A. Webb, B.A., gives a Report on New County and other Plant Records, 1924-26, most of which appeared in those pages.

TAHOURDIN, C. B. SOME NOTES ON BRITISH ORCHIDS, 1926-7. *Aceras anthropophora* Br., with two lips, was found in Hampshire. Teratological forms of *Ophrys apifera* are mentioned, including one with yellow-green flowers, also a white *Trollii*. *Cephalanthera* "*grandiflora*" with three distinct lips has been found in Surrey. One is always glad to have these notes.

THE BRITISH FERN GAZETTE. Edited by F. W. Stansfield, M.D., F.L.S., 120 Oxford Road, Reading. This, the organ of the British Pteridological Society, of which the President is W. B. Cranfield, is a well printed and excellent organ for fern-lovers.

THELLUNG, Dr A. Die Abstammung der Gartenmöhre (*Daucus Carota* sub-sp. *sativus*) und des Gartenrettichs, *Raphanus Raphanistrum*, sub-sp. *sativus*, in Fedde Rep. 46, ii., 1927. *Amaranthus Probstii* (*retroflexus* × *Torreyi*, nov. hybr.) from Switzerland, *l.c.* 270, 1926. Nuevas Orientaciones de la Botanica Systematica (Estudu sistematico-filogenético de los cereales). Fac. Agrim. et Vet. v., 315, 1926. Buenos Aires. Treats chiefly of Oats, Wheat, and Barley.

THURSTON, E., C.I.E., & C. C. VIGURS. Notes on the Cornish Flora. Royal Inst. Cornwall, 1927. Gives some interesting additions to the Flora.

TITS, D. Le Sahara Occidental: Contribution Phytogeographique. See Bull. Soc. Roy. Bot. Belg. 391, 1925. The districts des Dayas sud-oranaise, Hammada du Guir, Grand Erg occidental and Saoura are treated of. The Maroccan dunes have an attractive flora. There is a good bibliography and several illustrations.

TRAUSCHEL, W. The Species of *Beta*. Bull. Appl. Bot. 17, 203-220, 1927.

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON. This wonderful government department continues its extraordinary output of helpful literature. The Seed Inventory n. 80, 81, is one of its important branches. One of the fruits grown was from an unexpected source. We do not look to the Polygalaceae for an article of diet, yet the seeds of *P. butyracea*, a native of South Africa, yield much oleaginous and nutritive material. A hybrid plum (61224), *Prunus domestica* × *spinosa*, was sent from Koslov, Siberia, with a fruit 1½-1¾ in. diameter, very juicy and deliciously sweet. J. H. Kempton gives a valuable paper on Age of Pollen and other factors affecting Mendelian ratios in Maize.

WATSON BOTANICAL EXCHANGE CLUB, Vol. 3, n. 9, 1925-6. Distributor, F. J. Sheldon, B.Sc. 1735 specimens were distributed by 21 contributors. One notices *Anthyllis coccinea* L. is recorded from Cornwall, but surely Linnaeus did not give it specific rank—which however it deserves. Under *Scrophularia Ehrharti* it is said to have been only once recorded for Norfolk. I have recorded it from two places in that county and it is very abundant and luxuriant round Scoulton Mere, as I pointed out to our members in 1925. I use the name *S. alata* Gilib. as it has precedence. The critical remarks on the Salices and Menthae are quite interesting. Vol. 3, n. 10, 1927. Distributor, D. G. Catcheside, Jun. 2893 plants were sent in. The remarks about *Aconitum* omit that our English Aconite was described as a species, *A. anglicum*, by Dr Stapf. See our *Report* 763, 1925. On p. 377 the *Lotus hispidus* mentioned is the var. *major* Rouy. One is not surprised to see the note on *Vicia*, p. 377-8, but it needs qualification. Other authorities take a different view as to the status of var. *inclinata*. *Hieracium praecox*, var. *castanetorum* is a varietal name not included in Zahn's Monograph. I saw it plentifully in the station mentioned in Surrey. It is a well marked and handsome species.

WEST, G. S., & F. E. FRITSCH. A TREATISE ON THE BRITISH FRESH WATER ALGAE, IN WHICH ARE INCLUDED ALL THE PIGMENTED PROTOPHYTA HITHERTO FOUND IN BRITISH FRESHWATER. New and Second Edition. pp. 534 with 207 figs. Cambridge University Press, 1927; 21/-. Nature in reviewing the first edition said "The Treatise is one of the well known and excellent Cambridge Biological Series. . . . Its aim is stated as 'to give the student a concise account of the structure, habits and life-histories of Freshwater Algae, and also to enable him to place within the prescribed limits of a genus any Alga he may find in the freshwaters of the British Isles.' To do this within the limits of an octavo volume of less than 400 pages, in which are numerous illustrations, is a task possible of accomplishment only by one very familiar with the subject and skilled in concise expression; but that it has been successfully done will, we think, be the verdict after testing the book thoroughly." And if these remarks were true, as assuredly they were, at that time the same may be emphasised even in a stronger manner of the present valuable work. That it will be the standard authority for many years is undoubted and no student of these minute organisms can be without it. It is illustrated with 207 text figures and is printed in that clear and attractive type which is a characteristic of the Cambridge University Press. The foot notes are unusually copious, the arrangement and choice of type excellent, and one has nothing but praise for the labour which the authors have expended on this work. Any one who knew West could not help but appreciate and honour the manner in which he threw himself into the study. The scientific world is to be congratulated upon the very able collaboration which has produced this volume.

Wickes, Dean D. Flowers of Peitaiho. No. 1. pp. 87, 1926. Peking Leader Press; 1 dollar. This charming little work is produced by the Peking Society of Natural History under the general editorship of Bernard E. Read. The arrangement is that of the "Pflanzenreich." The Latin name has the Chinese vernacular name attached. An analytical key is supplied by J. C. Liu. The Chinese Bluebell is *Platycodon grandiflorum*. *Convolvulus Soldanella* is among the plants figured. *Viola Patrini*, the Blue Violet, is illustrated, but I saw it in Manchuria with even longer leaves. The volume is quite attractively bound.

Wild Flower Magazine, the Organ of the Wild Flower Society, edited by Mrs Dent, Flass, Maulds Meaburn, Penrith. This very popular Society is doing excellent work among many of our young and some of the older plant lovers. One notices that the list of plants sent in is much more accurate than formerly. Miss L. E. Richards, Miss H. Salmon, Miss Bacon, Lady Davy, Mrs Perrycoste, Hon. Mrs G. Baring, Mrs Hale, Mrs Godden, Mrs Davies, Mr N. Sandwith, Mr W. D. Miller, and Mr T. H. Green are able and efficient helpers.

Wilson, Ernest H., M.A., V.M.H., Keeper of the Arnold Arboretum of Harvard University. Plant Hunting. 2 vols., pp. 248, 276, tt. 128. Stratford & Co., Boston, Mass., 1927: 15 dollars. Dedicated to "Those of every Race and Creed who have laboured in distant lands to make our gardens beautiful," these two volumes are indeed a gift to be treasured since they are the account of his own personal experiences ranging from his visit to China in 1899 to South Africa in 1922. Therefore we have delineated the floral treasures of Africa, Australia, the Tropics, and the Orient in the first and the Tropics and the Orient in the second volume. His travels led not only "off the beaten tracks" but "over ground hallowed by memories of early plant hunters" to whom he does justice and pays his homage. The author has often been asked which of the countries visited he liked the best. He has found no ready answer. He looks back with pleasure and gratitude to each and every country visited for in all he has " found handsome trees and beautiful flowers." Once I remember going through a volume of replies made to many questions as to personal likes or dislikes. These had been filled up by eminent people for an album belonging to a daughter of a British Foreign Secretary. In reading it one was struck with the repetition of the name of Ceylon as the reply to the question of " which is the most beautiful land you have seen," and I hope it is not committing lèse-majesté to say that our present King in his naval days was among those who gave this island precedence. Not having seen Java or Hawaii it is the reply I should make. As Mr Wilson says, to enjoy scenery to the full the observer must be a botanist. This was Charles Darwin's opinion—"group masses of naked rocks, even in the wildest forms, may for a while afford a sublime spectacle but they will soon grow monotonous. Paint them with bright and varied colours and they become fantastic, clothe them with vegetation and they must form a decent, if not a beautiful, picture." A more descriptive word than decent might have been used. Wilson truly concludes a charming preface by writing " There are not happier folk than plant-lovers and none more generous than those who garden." It is truthfully said that " a congenial companion doubles the pleasure and halves the discomfort of travel and so it is with the brotherhood who love plants." Among the pioneers in plant-hunting the author mentions Plumier, who wrote about West Indian plants in 1689. The fragrant temple-flower, *Plumiera*, perpetuates his name. Cornuti still earlier, in 1635, gave an account of some American species. Both were Frenchmen. Then there were Clayton, who visited the Virginias in 1705 (the pretty *Claytonia* was named after him), Catesby, who went to Carolina in 1712, the Swedish Kalm, who visited America in 1748 (the ericaceous genus, *Kalmia*, commemorates him), and John Bartram, some of whose plants are beside me while I write. He was born in Pennsylvania and became the King's Botanist. There were among the earliest of the brotherhood. Wilson does not mention such names as Alexander Brown, D. Du Bois, and Dr Edward Bulkley who sent rich gatherings from the Cape and India prior to 1700, and whose plants are contained in the Du Bois Herbarium at Oxford, but of course it is not in the scope of the book to give more than a glance at the seventeenth century collectors. He feelingly alludes to the difficulty accompanying acclimatisation—some plants are so pernickety. South Africa is appropriately illustrated with a portrait of Francis Masson. He was the discoverer of *Centaurium Scilloides* in the Azores. In the review on Viticulture in these pages it is mentioned that the Dutch Commander, Van Riebeeck, introduced the Grape Vine to the Cape. The Dutch were great gardeners and wrote Gargantuan books on gardening such as the " Hortus Eystettensis." Paul Hermann, he says, in 1672 made a herbarium of Cape plants and as we know Petiver figures " one hundred elegant plants " in 1709 from that place in his "Gazophylacii." These include 8 species of *Pelargonium* and *Amaryllis Belladonna*. The view which Mr Wilson gives of *Ornithogalum Thyrsoides* covering the plain, and the fine range of mountains beyond, forms a beautiful picture of one of the earliest known Cape flowers. He relates how he was stirred by seeing for the first time in its native home a wild clump of the blue *Agapanthus umbellatus* as he was travelling by railway through Natal and how he "longed to get out and fondle his old favourite." The Kniphofias too were singularly attractive. *Helipterum eximium*, an "everlasting," with its six inch broad corymbs of ruby-red flowers, was a striking feature, but the wealth of flora is so great that volumes even larger than these could not do them adequate justice. It may be added that the Scarlet Geranium grows wild around Port Elizabeth; indeed the coastal belt of South Africa has probably the richest flora of the world. An excellent account is given of the various zones, and a vivid description of the flora around Cape Town and of the extraordinary Table Mountain with its unique Silver Tree and the glorious orchid, *Disa*, perhaps the most spectacularly beautiful terrestrial orchid in the world. Succulent plants, bulbous plants, Proteas and heaths form four dominant types. Three of these are found in other parts of the world but in less beauty, but the glorious Proteas are peculiarly South African, and a good illustration is supplied of *Protea Cynaroides*. A chapter is devoted to heather-bells which "in beauty are not excelled by any group of shrubs the world over," and exquisite pictures are given of them. The weird succulents are vividly described and aptly illustrated. But to me the Bulbous plants have an ever greater attraction—*Gladiolus*, *Ixia*, *Freezia*, *Babiana*, *Tritonia*, *Antholyza*, *Watsonia*, *Verme*, *Vallota*, *Haemanthus* (how the first I saw near Durban startled me) and *Amaryllis*. What visions of splendour they arouse! Central Africa, described in chapter 10, is called a Happy Hunting Ground and Kenya is rightly so named. There Wilson saw "floating on the distant horizon the rounded mass of Kilimanjaro while to the north the jagged peaks of Kenya peaked the heavens." The wonderful red Cedar, *Juniperus procera*, is well shown on plate 19, as are the striking spikes of *Lobelia Gregoriana*, 10 to 20 feet high, the giant Ragwort, *Senecio keniensis*, 25 feet high, and here too he saw *Brayera anthelminca*, a relative of *Alchemilla*, although of a height of fifty feet. It was originally discovered in Abyssinia by Bruce, and its flowers form the well known anthelmintic Kousso. In Kenya the natives call it Kimondo. The Cradle of the Nile and the Victoria Falls, with delightful illustrations, are well described. At the latter place he saw *Gladiolus primulinus* growing among the spray on the very verge of the cataract. Part 2 describes Australia "Home of Brilliant Blossoms or Giant Eucalyptus, or Fragant Acacias" and New Zealand "Scenic Isles mantled in green." Alan Cunningham is fitly figured at the beginning and allusion is made to William Dampier, whose name is connected with the wonderful blue Pea, *Clianthus Dampieri*, which can be grafted on *Colutea arborescens*. Other workers include Joseph Banks, Robert Brown and Ferdinand Bauer, the draughtsman, who took part in the Flinders Expedition when, from King George's Sound alone, 500 species were sent home. Western Australia was also visited by Wilson and arresting pictures of the *Xanthorrea reflexa* are given. The Eucalyptus trees, which cast no shadow, are well described as are many other trees. On the Sand-Plains which he says are really rare gardens where numberless species riot in colour, the glistening flowers of the Everlastings are conspicuous. Western Australia has no epiphytic orchids but already 4000 species of plants are known to be indigenous, of which four-fifths, he says, are endemic. The tale of Botany Bay, at first aptly so designated, afterwards a name of ill-omen, with its strange history, is tersely told, and full justice is done to other parts of the island continent with its 10,700 species of which not more than a thousand are grown in northern gardens. That grand Wattle, *Acacia Melanoxylon*, has a charming photograph. A fitting chapter of tributes is devoted to those " who paid the price of exploration in that thirsty land." Tasmania is rightly called the Isle of Enchantment, and a dainty view is given of *Richea* with a graceful waterfall as a background, and there is another of the rain-forest in which *Nothofagus* and *Anadopetalum biglandulosum* are conspicuous features. New Zealand has "green—intense green for its keynote," but it is not wholly green as the beautiful Tea tree, *Lithospermum scoparius*, evidences. The Kauri Pine is " one of the noblest of existing trees," its clear trunk stands above the forest undergrowth like a granite pillar in a vast cathedral," and there are wondrous pictures of *Haastii*, the Vegetable Sheep, and Tree ferns which to have glimpsed is sufficient to make a nature-lover's heart throb with delight and gratitude. The frontispiece to Vol. 2 is a portrait of the eminent horticultural explorer, J. G. Veitch. The first chapter treats of some of the more conspicuous flowering trees of the Tropics such as the vivid scarlet-flowered *Poinciana regia*, the glorious orange-yellow blossomed *Colvillea*, the African *Spathiodea*, the Palms in all their great variety, *Dipterocarpus* and Mangroves. There are very readable chapters on the "gifts bestowed " in the form of fruits, food, and flowers, the last including an *Aristolochia* with a blossom "2 feet wide and 2-2½ feet long with a tail over a yard in length and an odour almost as long." The orchids are illustrated by many plates. Chinese and Japanese plants receive due attention. The former country he calls the " Kingdom of Flowers " although when I went through it in early spring few were in evidence. Wilson was more fortunate for, although his journey up the Yangtse river for 1800 miles was the way I went, he proceeded up its tributary the Min for 250 miles to the confines of Thibet, to a region where mighty empires met—I say met, because one of the rivers now lies in the trough of degradation. It was here in June that he saw in tens of thousands the regal lily, 2 to 4 feet high, with flowers pure lustrous white on the upper side and tinted with wine-purple on the under side, and exhaling the most delicious fragrance. From there he sent home 6000 or 7000 bulbs but this depredation exacted its price since on his return he was nearly killed by a landslide which shattered his leg. However there are now growing in America from this stock millions of these lilies. One cannot write in cold blood of these wonderful alpine meadows of the hinterland of China. Farrer could picture them in all their vividness and splendour, but Wilson is by any means inarticulate, and his lovely pictures often speak for themselves. The most gorgeous alpine plant extant he claims for *Meconopsis Henrici*. The visits to Korea, Japan and Formosa and the ascent of the highest mountain in Formosa, Mount Morrison, the loftiest elevation between the Californian Sierras and Western China, and the description of the highest sea cliff in the world (8000 feet) have thrilling points of floral interest. To the armchair traveller, alike to the footsore veteran, these volumes will prove most attractive reading.

WILSON, ERNEST H. MORE ARISTOCRATS OF THE GARDEN, pp. ix., 288, tt. 43. The Stratford Company, Boston, Massachussetts, 1928, five dollars. This is an addition—a notable addition—to his previous work with a similar title which was published in 1917. He says of the former in the preface to this work that it "fell largely on barren soil and passed out of print," but the author secured the moribund rights, made additions and changes, and issued a second edition in 1926. That work met with a very different reception, and its success has induced him to bring before the public this important volume, which treats of hundreds of new Aristocrats available for American gardens, many of which would flourish well in Britain. About these he has given wise advice, such as could only have been obtained by years of experience, and in gaining this knowledge he had the enormous advantages of practical study in the Arnold Arboretum. Among the species figured are the beautiful *Cornus Nuttallii*, which grows well in Britain but does not become such an object of beauty as it presents in British Columbia. There is the Chinese Witch-Hazel, *Hamamelis mollis*; the Asiatic *Magnolia stellata*; the Bearberry, *Arctostaphylos Uva-ursi*; the English Elm, *Ulmus procera*, in its winter state, which the author says has been grown for nearly two centuries in the States, and of which fine specimens are grown in Boston. This is the *Ulmus sativa* Mill. of the British Plant List. He considers it one of the best of trees for town planting. *U. americana* is also figured, as are, among others, *Fagus sylvatica* and *Cotoneaster horizontalis*. Very many other species are mentioned in the text (the type of which is good for tired eyes) and wise hints as to what to select and where and how to plant them are given. He says *Ulex europaeus* is less hardy than the broom in America. Ground cover-plants are not forgotten, and he gives a well-deserved meed of praise for this purpose to the *Unifolium (Maianthemum) canadense*. As for street trees he recommends the English Elm and *Ailanthus glandulosa*. What a range of soils and climate that plant can endure. It was one of the chief ingredients in the street avenues in Cyprus, and Mr Wilson says it seems to prefer brick and mortar or ash-heaps to good soil in the States. He gives a bad name to the Lime and Horse-Chestnut for street planting. For the colder parts of the States he prefers *Quercus rubra* and *Q. coccinea*, which have grand autumnal colouring, also the Norway Maple.

Why is this not more planted in Britain? It was a great joy to see it about Swedish towns and villages, as it also puts on a glorious autumnal garb. As an avenue tree he rightly says that *Ulmus americana* is one of the most beautiful trees in the world. The narrow and short-sighted vision of the curators, a quarter of a century ago, rejected the offer of a present of 100 of these trees for the Oxford Parks. Had they been accepted, by this time it should have had an avenue of splendid proportions and of great charm. The book teems with good material, and should be in the library of every tree lover.

World List of Scientific Periodicals Published in the Years 1900-21. Vol. 2. Abbreviated Titles and Locations of Sets. pp. xii., 344. Oxford University Press, 1927; 25/-. About 25,000 periodical titles are included, as well as where the periodical may be consulted. The original edition was by Dr A. W. Pollard, assisted by W. A. Smith, but this second volume is undertaken by Mr W. A. Smith helped by Dr P. Chalmers Mitchell and Dr Pollard.

Wolff, Hermann. Umbelliferae. See Das Pflanzenreich iv., 228. pp. 398, 1927. In the *Report* for 1926 (pp. 82-3) a review appeared of Dr Albert Thellung's excellent Monograph of the Umbelliferae of Central Europe and comment was made on the excellent illustrations, many of the species being shown in their natural surroundings. In this portion of "Das Pflanzenreich" Dr Wolff treats of a portion of the family, e.g. the Ammineae which include *Apium* L. into which is merged *Helosciadium*. as in Bentham and Hooker's "Genera." The cultivated form of *A. graveolens* is *A. dulce* Mill. = *A. Celleri* Gaertn., here put as a variety of *graveolens*. Under *A. nodiflorum* are given (1) *ochreatum* (DC.) Lange, (2) *pseudo-reptans* H. C. Wats. = *Sium repens* Sm. = *A. nodosa*, var. *ochreatum* Bab. non DC. = *Helosciadium nodosum*, var. *repens* Syme, and (3) *longipedunculatum* (F. Schultz) Dr. in Brit. Pl. List, 1907. *A. repens* (Jacq.) Reichb., which is found in England, Sweden, Belgium, Holland, Denmark, Germany, etc., is kept as a distinct species. *A. Moorei* (Syme) Dr is also kept as a distinct species. However it may be a more or less fixed hybrid which is very local in England. *A. inundatum* has vars. *isophyllum* and *heterophyllum* not yet recorded from Britain. Under *A. Ammi*, an Australian species, *A. leptophyllum* F. v. Mueller, is cited as a synonym (see Addenda 362) but Schinz & Thellung have shown that it is *A. tenuifolium* (Moench) Thell. *Petroselinum* is kept apart from *Carum* and *P. hortense* Hoffm. = *Apium Petroselinum* L. The typical plant is *latifolium* (Mill.) and *crispum* is used for the crisped variety. In this genera *P. segetum* is retained. In this group are *Sison*, and *Cicuta* with three varieties, the British plant being var. *classica*. The adventive *Ammi* has three varieties, the type and *glaucifolium* occurring with us. *Falcaria* of 1800 is chosen instead of the earlier *Prionitis* Adans. Had tautonyms been used the name *Falcaria Sioides* might have been avoided, but *Prionitis Falcaria* is at once the older name retaining the original trivial and it is used by the expert Koso-Poljauski. *Carum* is a much narrower genus as treated by Wolff. *Carvi* is given as British. *Bulbocastanum*, following Linnaeus, is put into *Bunium*. *Pimpinella* includes *P. Anisum*, *P. major*, and *P. Saxifraga*. The var. *dissecta* was established in *Fl. Oxford*, 1886, prior to the authority cited. Many forms of *P. Saxifraga* are given. The type (*integrifolia*) *P. Saxifraga* Mill. is said to be equal to *poteriifolia*. Sprengel is given as the authority for var. *dissecta* (Retz.) but Withering, 1796, precedes Sprengel, 1818. Var. *nigra* has been recorded as British but without sufficient evidence. The root of the true *nigra* when cut or bruised turns bluish-black. The garden pest, *Aegopodium*, has 12 forms described, not one of which would not be anathema. *Sium erectum* is put in the genus *Berula*. There are five forms described. In the Addenda Thellung's views on the forms of *Apium nodiflorum*, *Moorei*, etc., are cited. The Index is copious and unlike some of our English publications is put in the proper place at the end of the text. What an enormous amount of time is wasted in trying to find it in a volume where two or three supplements are inserted after it.

OBITUARIES.

BRANDEGEE, TOWNSEND STITH. Born at Berlin, Connecticut, 1843; died April 7, 1925, at Berkeley, California. He explored the Great Cañon of Arkansas and the Santa Barbara Islands. He obtained trunks of *Larix Lyallii* from the top of Mt. Stewart, Washington, and *Abies venusta* from the Santa Lucia Mountains. The latter cost him 400 dollars to get out. He did much exploring in Mexico. He and his wife were associated in Botanical work in California and they left their Library and Herbarium to Berkeley University. Mary Katharine Brandegee, his wife, died at San Diego on May 29, 1889. She took a medical degree, but eventually became Curator of the Californian Academy of Sciences and in 1891 founded a Botanical Club. Her bitter and caustic criticism of Edward Lee Greene ruffled the placid pond of Botanical amenities of the Golden West. See obituary notice by W. A. Setchell in University of California Publications, vol. xiii., 1926.

CAMUS, EDMOND GUSTAVE. Born 1852; died August 22, 1915. He studied at the Ecole de Pharmacie de Paris, and qualified with a diploma of the First Class. He threw himself into field botany with zeal and in 1891 founded a Society whose chief object was to be the study of the French Flora. In 1885 he published an " Iconographie des Orchidées des Environs de Paris " with 40 plates and in 1908 a " Monograph of the European Orchids " of 484 pages. In 1921, with A. Camus, he published an "Iconographie des Orchidées de l'Europe et du Bassin Méditerranéen," the latter botanist preparing the anatomical details. Coloured plates of most of the European Orchids with numerous varieties and hybrids are given. Although good they cannot rank as of the first-class in botanical engraving. Compare the orchids in the " Flora Londinensis." Unfortunately the greater segregation of the Palmate Orchids of the Maculata series had not then been brought to the notice of the authors. The absence of printed particulars on the plates is a great disadvantage. The sheet labelled *O. latifolia* is really made up of aggregate *O. maculata* L., thus perhaps aiding in the confusion respecting the former plant. Very many of these hybrids are described by Camus for the first time. The book stands out as a most important contribution to our knowledge of the European Orchids. He also monographed the Willows under the titles of " Classification des Saules de l'Europe," 1904, " Monographie des Saules de France " and the " Classification et Monographie des Saules de l'Europe," 1905. With Rouy he collaborated in the production of vol. vi., 1900, and vol. vii., 1901, of the " Flore de France." He prepared the Cyperaceae for the Flora of Indo-China in 1912, and a Monograph of the Bamboos in 1913. In 1922, M. Lecomte issued " The Cypéracées and Graminées of Indo-China," and in 1927 a volume treating of the Orchids with text and supplementary plates, most of the material of which had been prepared by him. His energy and industry were amazing, no fewer than 600 plates being drawn by him. As M. Lecomte in his Memoir truly says, "On se demande ce qu'il faut le plus louer, de la sagacité et de l'étendue des connaissances du Botaniste; de l'activité inlassable du travaillure ou du talent consommé de l'artiste. Ces diverses qualités réunies assurent à la mémoire E. Gustave Camus une légitime et durable notoriété." This biographical notice was reprinted in 1927 and it is to Mlle. Aimée Camus, his devoted daughter and collaborator, a Laureate de L'Institut, that we owe this account which is accompanied by a full list of Camus's publications occupying three quarto pages.

Dillwyn-Llewelyn, Sir J. T., Bart., V.M.H. Born in 1835; died at Penllergaer, Glamorgan, 1927. He went to Eton in 1846 and then to Christ Church, Oxford, where he took honours in Natural Science. He came of a botanical family and was himself an enthusiastic gardener serving on the Council of the Horticultural Society in 1891. He was Victorian Medallist in 1907. In 1890 he was created a Baronet. He served as Mayor of Swansea in 1891 and in 1895 he became its representative in Parliament.

Fitch, John Nugent. 1840-1927. He was the nephew of the great botanical artist, Walter Hood Fitch (1817-1892), and received much instruction in drawing from his uncle. He prepared about 2500 lithograph plates for the Botanical Magazine, 1878-1920, when he lost the use of his fingers. He was born in Glasgow, became F.L.S. in 1877, and died at East Finchley in 1927.

Jackson, Benjamin Daydon. Born at Stockwell, London, April 3, 1846; died, on October 13, 1927, in Westminster Hospital from injuries received by being knocked down by a motor car twelve days earlier in Buckingham Palace Road. Educated at Private Schools, he was occupied in business for some years. Becoming interested in botany and microscopy, he joined the Quekett Club in 1869. There are many specimens of Salices in my herbarium collected by him. His first published botanical contribution was the life of William Sherard, the founder of the Sherardian Chair of Botany at Oxford, where Sherard's very large Herbarium is preserved. The biography appeared in the Journal of Botany for 1874, and was followed by the Life of John Gerarde, 1876,[1] and of Dr William Turner in 1872.[2] Then he prepared for the Index Society's Publications the "Guide to the Literature of Botany," which was begun in 1878. This, although still largely used, is not very satisfactory owing to the over-elaborated arrangement. It includes an Index of over 6000 titles supplemental to Pritzel's "Thesaurus," which was the basis of his work. In 1880 he became

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[1] Catalogue of Plants cultivated in the Garden of John Gerarde in the years 1596-1599.

[2] William Turner Libellus de re Herbaria Novus 1538.

Secretary (Botanical) to the Linnean Society, an office which he held to 1902, when he became its General Secretary, an office which he held till 1926. During this long period he acted with great fidelity to the Society, to which his literary attainments added lustre and afforded assistance. Tall in stature and pleasant in demeanour, he favourably impressed strangers, while his ready help to all enquiries earned for himself a large circle of friends who quite recently showed their esteem and affection by presenting him with his portrait, painted by Ernest Moore. A reproduction appeared in *Gard. Chron.*, June 6, 1926. It now hangs in the Rooms of the Society, whose minutes he read for many years. He prepared an "Index to the Linnean Herbarium" in 1912, and an excellent Catalogue of the Library in 1925. For many years he wrote the obituaries of its members, and edited its Journal, Transactions, and Proceedings. Even when relieved of the Secretaryship at the age of 80 he became the Curator of the Linnean collections, not by any means an Honorary office. In 1923 he published the English edition of the "Life of Linnaeus" which had been prepared by T. M. Fries. A copy was accepted by the King of Sweden on his visit to the library. In 1882 he published "Vegetable Technology: a Contribution towards a Bibliography of Economic Botany." He was a born indexer, and therefore no one more suitable could be found to produce an Index of Plant Names—a work which Charles Darwin had the prescience to see was a *sine qua non*, and to the carrying out of which he generously contributed. Jackson (*Journ. Bot.* 67, 1887) gave some particulars of what the preparation of the Index involved. Each genus was enclosed in a stout cover, inscribed on the outside, and these were placed in strong boxes with a falling front. Rather more than 36,000 covers were required for the genera, and the whole of the MS. is accommodated in 178 boxes, and weighs rather more than a ton. The preliminaries consumed 18 months with the help of from two to four assistants. It was found that to prepare an Index on the lines of Steudel was quite impossible, and that a reduction of species without examination would only create confusion. It was understood that Jackson, having drawn up an estimate of its cost, which was approved by Darwin, "was commanded to commence his labours under the direction of Sir Joseph Hooker who was, at Mr Darwin's request, responsible for the work." The title page to the First and Second Fascicles, dated 1893, says "compiled at the expense of the late Charles Robert Darwin, under the Direction of Sir Joseph Dalton Hooker by B. Daydon Jackson." Fascicle three appeared in 1894 and Fascicle four in 1895. Despite the omission of the date of the publication of the various works cited, of its not including under each valid name its various synonyms, and of the absence of the Cryptogamic species, the work is of immense value, and is a permanent memorial to his unrivalled powers as a Botanical lexicographer. It has been said that his knowledge and unwearied industry received somewhat too scanty acknowledgment from the Editor of the Index, but those most qualified to judge know how to apportion the credit, and there is no fear that posterity will overlook his great services to Botanical literature. Jackson, in conjunction with the great Belgian botanist, Theophilus Durand, compiled the First Supplement to the Index of nearly 50,000 names, for the years 1886-1895 inclusive. Owing to the failure of eyesight of his colleague, the major portion of this work fell to Jackson. As the work was printed and published in Brussels (1901-6), which made collaboration with his co-author more difficult, its typography and freedom from small errors are less satisfactory than the earlier portion printed by the Clarendon Press. Field-workers are indebted to him for editing Reginald Pryor's "Flora of Hertfordshire." The author died before its publication, bequeathing the MS. to the Hertfordshire Natural History Society, of which Jackson was at one time President. The biographical matter in the published work is due to the pen of Dr Jackson. Botanists, too, owe to him the biography of "George Bentham," published in 1906 in the English Men of Science Series. His "Glossary of Botanic Terms" went into three editions, and he revised the proofs for a fourth just before he died. At the bicentenary of Linnaeus' birth, which was celebrated at Upsala, Dr Jackson received the Hon. Ph.D. of that University and was made Knight of the Polar Star in 1907. In 1900-1 he was Secretary to the Departmental Committee of H.M. Treasury on Botanical work. There are many most valuable notes scattered through the pages of the "Journal of Botany" chiefly on nomenclatorial subjects, in which he took great interest. It may be remembered that an attempt was made to bring the "Flora Anglica," one of the dissertations prepared by a student of Linnaeus, into the area of citation so that *Ulmus campestris* could be used for an English elm, overlooking the fact that the name had been given in the "Species Plantarum" for a tree or trees, which are certainly not English. I showed in the "Journal of Botany" how dangerous it would be to admit this essay into the area of citation and how vague and unsatisfactory it was since the identifications were merely guesses at the names given by Dillenius in the "Synopsis" of 1724, and that it teemed with errors. Jackson, writing of the theses in 1912, says "Many years ago I thought well of the 'Flora Anglica,' resp. Grufberg, but I soon found out the unsatisfactory character of it. Though Linné dictated his theses to the candidates, the 'Flora Anglica' belongs to a group of them, in which the respondents had to do some compilation, and the Praeses probably cast only a hurried glance through the completed work." His funeral was largely attended by representative botanists at Golders Green on October 17, and this Society would have been represented but for an important meeting which I could not neglect. Only a few days before his death I saw him, when he gave me some very interesting and indeed humorous details about George Bentham and of the historic meeting at the Linnean Society which led to Bentham's withdrawal from its meetings.

JOHNSTON, Sir HARRY HAMILTON. Born at Kensington, 1858; died at Woodletts House, Notts, July 31, 1927. At first he studied at the

Royal Academy Schools intending to become an artist. Some of his pictures have been exhibited in the Royal Academy. Having visited Tunis in 1879, he went to Southern Angola in 1882 and proceeded later to the Congo, where he met Stanley in 1883. Of this journey he published an account under the title of "The River Congo." In 1884, helped by the Royal Society and the British Association and backed by Sir J. D. Hooker, an expedition to Kilimanjaro was planned and he was made its leader. Of this journey in 1886 he published an account under the title of "The Kilimanjaro Expedition." The plants collected on this journey were sent to Kew, as well as those he collected in the Cameroons in 1887. The next year he became Consul in Portuguese East Africa and made a journey to Lake Nyasa. The large collections he made have been incorporated in the "Flora of Tropical Africa" and Burkill describes others in Johnston's "British Central Africa." It will be remembered that he discovered the Okapi in Uganda. He also explored Ruwenzori and on his return to England he published "The Uganda Protectorate" in 2 volumes. Liberia was visited in 1904-06, and another 2 volumes about that Republic appeared. He received the K.C.B. in 1896 and G.C.M.G. in 1901. He was also a D.Sc. of Cambridge.

LAWSON, ABERCROMBIE ANSTRUTHER. Born in Fife in 1874; died at Sydney, March 26, 1927. He was educated at the University of Glasgow and later studied in California, Chicago, and Bonn. He became Instructor of Botany at Stanford University in 1904, assistant professor in 1905-6, and Lecturer in Botany at Glasgow University, 1907-12. In 1912 he went to Australia as Professor of Botany at Sydney University. His published works included "The Morphology of the Gymnosperms," "Cytology," "Psilotaceae" and "The Pollen Mother-Cells of Cobaea." He was selected as a Fellow of the Royal Society in January 1927, but died before he could be formally admitted.

O'MALLEY, LADY. Born, Essex, 1847; died, June 25, 1927. Emma Winifred, second daughter of the late Joseph Alfred Hardcastle, for many years M.P. for Bury St Edmunds, by his first wife, Frances, daughter of the late W. Lambirth, Esq., was born in Essex in 1847. In June 1869 she married Sir Edward L. O'Malley, Attorney General for Jamaica, 1876-80, and for Hongkong, 1880-89; Chief Justice of the Straits Settlements for four years subsequently; and afterwards for British Guiana till 1898. She was well known for her botanical tastes, chiefly affecting the Ferns, and published in 1869 in the pages of "Science Gossip" an account of those of Hongkong and China. She also prepared an account of "Some Ferns of Jamaica," which unfortunately was never published. However, her fine collections were accepted by the British Museum authorities as a welcome gift with thanks, especially as they were made in the early days of these countries (especially Jamaica), being studied scientifically, and were considered more valuable on this account. She died, June 5, 1927, much lamented by all who knew her. She is survived by her husband, and four of her five children. She had for years resided at Denton House, Cuddesdon, Oxford.

J. C. MELVILL.

PEGLER, LOUIS WELLESLEY HEMINGTON, M.D. Born at Colchester, November 18, 1852. He practised as a nose, throat, and ear specialist in Harley Street. For many years he lived at Exeter, where he was greatly respected and beloved. He was a member of our Society for a short time, but his chief interest was in Bryology. He died at Exeter on February 26, 1927, "having borne much suffering with great patience."

POWER, DR FREDERICK BELDING. Born at Hudson, New York, in 1853; died at Washington, March 30, 1927. He took the Ph.D. of Strasburg in 1880. For many years he was director of the Wellcome Research Laboratory and worked assiduously, chiefly on the constituents of plants. In 1913 he received the Hanbury Medal for his valuable research work. He was a pleasing companion and one who was a mine of information on his own subjects. It was a real loss to me when, before the war, he returned to the United States to carry on similar work in the phytochemical laboratory of the U.S. Department of Agriculture.

RADLKOFER, DR LUDWIG. 1829-1927. Born at Munich on December 29, 1829, where he took his degree of M.D., this distinguished botanist became Professor there in 1863. He monographed *Serjania* in 1875. He was interested in Sapindaceae, of which he wrote a synopsis in "Die Natürliche Pflanzenfamilien" in 1895. In that year also he wrote a monograph of *Paullinia*, which appeared in the Bavarian "Abhandlungen."

ROFFEY, REV. JOHN. Died 1927. He graduated at Oxford in 1884, was ordained in 1885, and became Curate at Long Eaton, Notts. In 1894 he came to London, and in 1924 became a licensed preacher in the diocese of Southwark. At the time of his death, which occurred suddenly at Riva-sul-Garda, he was attached to St Alphege's, Southwark. He took up the study of the British Hieracia, and on these I had some correspondence with him: in fact, he undertook to give us revised material for our new List. He published very little, save, in the "Journal of Botany," his "Explanation of the Hieracia" in the 11th Edition of the "London Catalogue," for which he was responsible. His herbarium is to find a home in the Natural History Museum at South Kensington.

ST JOHN MARRIOTT. 1870-1927. He was the third son of Thomas Hyde Marriott, of Sandbach, Cheshire. In his early days he was a good athlete, a capital sprinter, a keen shot, a skilful angler, and a sturdy boxer. He explored the Grampians for Mosses and visited New Zealand, penetrating the great forests of that delightful country. On taking up residence in Kent he became an energetic member of the

Woolwich Scientific and Historical Society. He also collaborated with the South London Botanical Institute, the Selborne Society, the South Eastern Union of Scientific Societies, and the Metropolitan Field Clubs. To the beauties of Dartford Heath he was always a willing and inspiring guide, and in doing this he was most careful to do no damage to the flora met with. Of the Dartford Field Club he was a most valued member. He was busy to the last in investigating the Hepaticae with a view for the S.E. Congress at Rochester in 1928. He had already contributed Notes on the Bryophyta of Essex as a Handbook to the meeting at Chelmsford in 1926. The Dartford Museum owes him gratitude for a collection of Mycetozoa. He was the first chairman of the Plumstead Natural History Society, and Hon. Secretary to the Woolwich Historical and Scientific Society. His chief contribution to Botanic Literature was "British Woodlands; as Illustrated by Lessness Abbey Woods," published in 1925. It is a survey of the flora and fauna of that Kentish woodland. We reviewed it in our *Report*, p. 826, 1925. In it he enumerated 328 species of Flowering Plants, 3 Ferns, 111 Mosses, 32 Hepatics, 241 Fungi, 12 Lichens, and 46 Mycetozoa, a sufficient evidence of his industry and ability. He frequently supplied us with specimens as the pages of our Reports show. Alas, some of these will be published posthumously, for he kept at his work to the last. For some time he had been indisposed with throat trouble, and a journey to Scotland did not relieve him, as it proved to be malignant. He went to a nursing home on October 3 for an operation and died only four days later, on October 7. He was buried in Plumstead Cemetery, where the large gathering of friends testified to the respect and affection in which he was borne.

Sargent, Charles Sprague. 1841-1927. Born at Boston, April 24, 1841; died there on March 22, 1927. See Notice by Alfred Redher in "Journal of Arnold Arboretum," 69-87, 1927. His father, whose ancestors came from England before 1678, was a merchant in the East India trade. Charles Sargent graduated from Harvard in 1862, entered the Military Service and became First Lieutenant in the Second Louisiana Infantry and subsequently Aide-de-Camp at the headquarters of the Department of the Gulf at New Orleans. He took part in the campaign against Mobile, and on August, 26, 1865, he was honourably mustered out. Then for three years he travelled in Europe, returning in 1868 to take up the practice of horticulture and the study of botany. In 1872 he became the director of the Harvard Botanic Garden, and on November 23, 1873, he was appointed director of the newly created Arnold Arboretum. He married in 1873, his wife being an ideal companion, sharing his tastes, his love of trees and of nature. She accompanied him on his cruises along the Florida Coast and went with him to Mexico. A skilful artist, she painted the drawings illustrating the flowers and fruits of the trees represented in the collection of American woods prepared by her husband for the American Museum of Natural History in New York. The New Arboretum when Sargent went to it was a "worn-out farm, partly covered with natural plantations of native trees, nearly ruined by excessive pasturage. It had to be developed into a scientific garden with less than 3000 dollars available for the purpose." However, Sargent was equal to the task, and he overcame difficulties which would have retarded or would have proved insurmountable to the ordinary individual. What the Arnold Arboretum is now is owing to his knowledge and courage. What an asset it is to his State. In 1882 he was approached by Professor S. F. Baird to undertake the preparation of a Silva of North America. This was to be published by the Smithsonian Institution. The regulations as to payments laid down were, however, of such a nature that Sargent estimated the publication would take 75 years to complete. He, therefore, made another arrangement, and engaged a botanical artist, C. E. Faxon, to prepare the plates. The first of the fourteen volumes was ready in 1891, and the last of the 749 plates appeared just 21 years after Faxon had made the first drawing. Riocreux and Picart engraved the copper plates. Thus was carried out the "Silva of North America" which is renowned for the accuracy and clearness of the plates and the extraordinarily complete and vivid plant descriptions, a book of which any country might well be proud. In 1882 and 1883 he was a member of the Northern Pacific Transcontinental Survey, on which the magnificent and extensive glaciers in Northern Montana were discovered. At that time Sargent advocated that this region should be declared a National Park. Even in that rapidly moving country it took 30 years for Congress to make an Act to carry this project into effect. In 1892 he visited Japan, and published an account of its Forest Flora in 1893. In 1900 he began the study of the genus *Crataegus*, which he continued for 20 years, describing and naming about 730 new species. Like an English boy who, if the weather is favourable, is supposed to have said, "It is a fine day, let us go out and kill something," so it was stated that if nothing else had to be done Sargent said "Let us go out and find a new Hawthorn." His publication "Trees and Shrubs" was started in 1902, and in the eleven years of its existence 2000 plates were published. In 1903 he circumnavigated the globe, bringing much material for the Arboretum. In 1905 he issued his "Manual of the Trees of North America." A second edition appeared in 1922, which was reviewed in these pages (*Report* 125, 1923) and a reprint in 1926. It is splendidly executed, a marvel of compactness and excellence, in which 783 species of trees are described. In the winter of 1905-6 he collected chiefly in Peru and Chile on his South American journey. From 1911 to 1917 he was busy editing the three volumes of "Plantae Wilsonianae" from plants collected for the Arboretum by E. H. Wilson in China. This is one of the most important contributions to the flora of that unsettled country. In January 1924 he had a severe attack of herpes, and from this and intestinal trouble he never recovered, although until the end came he attended from time to time the Arboretum, which was the child of his industry. The Library connected with it, of more than 37,000 volumes and nearly 9000 pamphlets, is almost entirely his gift. More than 1000 species of trees and shrubs were introduced to the United States through the Arboretum, besides 570 new species of *Crataegus*. Honours were showered upon him, and he deserved them all, but his great monument is the Arboretum and the "Silva," which will be enduringly connected with his name.

Smith, Matilda, A.L.S. 1854-1926. A cousin of Sir Joseph Hooker, it was my good luck to make her acquaintance at his hospitable board when he was Director of Kew Botanic Gardens. Under his tuition she was initiated into the mysteries of Botanic draughtsmanship. Having already some experience, she rapidly became a careful and pleasing delineator, so that she was enabled to take up the pencil which had dropped from the fingers of Fitch. Her first drawing for the Botanical Magazine appeared in the 104th volume of that magazine. In 1881 she became the artist and lithographer for Hooker's "Icones." She was a very pleasing conversationalist, and had a keen sense of humour. In 1898 she was somewhat tardily put on the Kew Staff as its artist. Many other Botanical works benefited from her excellent drawings. Among these are Sir George Watt's "Cotton Plants," Collett's "Flora Sinensis," Cheeseman's "Illustrations of New Zealand Plants," Bayley Balfour's "Flora of Socotra," Aitcheson's "Botany of Afghanistan," and Stapf's "Aconites of India." These services fully justified her election as A.L.S. in 1921, and more recently the award of the Veitchian Medal from the Royal Horticultural Society. Mr S. T. Dunn named an Urticaceous genus, *Smithiella*, in her honour. She deserved to be connected with a more beautiful family of plants.

NEW COUNTY AND OTHER RECORDS.

Abbreviations.—*Rep. B.E.C.*=*Report of the Botanical Society and Exchange Club*; *Trans. Bot. Soc. Edin.*=*Transactions of the Botanical Society of Edinburgh*; *Wats. B.E.C.*=*Report of the Watson Botanical Exchange Club*; *Devon. Tr.*=*Transactions of Devonshire Association of Science, &c.*; *Journ. Bot.*=*Journal of Botany*; *Nat.*=*Naturalist*; *N.W. Nat.*=*North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.*=*Wild Flower Magazine*, ed., Mrs Dent; *Fern. Gaz.*=*British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marlb.*=*Report of the Marlborough College Natural History Society*; *R.I.C.*=*Journal of the Royal Institute of Cornwall*; †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany*; [ ] enclosing a record mean that confirmatory evidence is needed.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species, and we have also to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Dr Ronniger, Dr J. Murr, Dr E. Almquist, M. Jaquet, Mr A. Bennett, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Paul de Riencourt, Mr C. E. Salmon, Mr W. H. Pearsall, Rev. J. Roffey, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

†1/2. Clematis Flammula L. Quite naturalised on the shingle at Sandwich, Kent, Hon. Mrs Guy Baring.

*†3/12. Anemone Hepatica L. On the Ousdale Burn flowing from the Scaraven range, on the Ord of Caithness, near Latheron, 1925, S. Manson, ex James Sutherland. Full particulars are needed as to its surroundings and possible source of introduction.

5/1. Myosurus minimus L. Constant in its occurrence for ten years on the Straight Points Field, Budleigh Salterton, Devon, C. E. L. Gardner.

6/3. Ranunculus acer L., var. multifidus DC. Side of Loch Maree, W. Ross, Druce. Dr Thellung, this year, says *in litt.* "cf. *multifidus*." The leaves are divided into narrow segments.

6/7. R. Flammula L., var. alismifolius Glaab. Culeaze, Dorset, Druce.

6/10. R. SARDOUS Cr. As the type at Ridge, Dorset, **DRUCE**. Var. TUBERCULATUS Celak. Waste ground, Woking, Surrey, **DRUCE**.

6/20. R. FLUITANS Lam. In the Teifi, Tregaron Bog, Cardigan, **J. H. SALTER**.

6/21. R. CIRCINATUS Sibth. Llangorse Lake, Brecon, **Miss I. M. ROPER**.

6/22. R. TRICHOPHYLLUS Chaix. Moel Ynas Pool, Cardigan, **J. H. SALTER**.

6/28. R. BAUDOTII Godr., f. MARINUS. Aberdovey, Merioneth, **J. H. SALTER**.

6/33. R. FICARIA L. At present Herr Winkler has not reported on the plants sent to him. This season the plant fruited freely at Culeaze, Dorset, **DRUCE**. The var. (?) SINUATUS Horw. was noticed at Downton, Wilts, and Redhill, Northants.

†13/3. DELPHINIUM AJACIS L. Hackney Marshes, Middlesex, **DRUCE** and **MELVILLE**.

†14/1. ACONITUM ANGLICUM Stapf. Ripon, Yorks, **Miss TODD**; Pont Flocksman, Carmarthan, **WEBB**.

†14/3. A. CAMMARUM L. Wood at New Dalry, Ayrshire, 1908, **H. E. FOX**, as *Napellus*.

†17/2. BERBERIS AQUIFOLIUM Pursh. Abundant, but no doubt planted, Wexcombe, Wilts, **DRUCE** and **Hon. Mrs BARING**.

20/1. CASTALEA ALBA Wood, var. MINOR DC. Pevensey Marsh, Sussex, **Miss I. M. ROPER**.

21/2. PAPAVER RHOEAS L., var. TROWERIAE Dr. Steephill, Isle of Wight, **DRUCE**.

†22/1. MECONOPSIS CAMBRICA Vig. On rubbish dumps near Dundee, Angus, **DRUCE** and **CORSTORPHINE**.

†23/2. GLAUCIUM CORNICULATUM Curt. Burton-on-Trent, Staffs, **DRUCE** and **Sir ROGER CURTIS**; very fine at Splott, Cardiff, Glamorgan, **DRUCE** and **SMITH**.

†24/1. ROEMERIA HYBRIDA DC. Splott, Glamorgan, in some quantity and in good flower, **SMITH**.

*†29/3. HYPECOUM PENDULUM L. Splott, Glamorgan, **SMITH**.

†31/4. CAPNOIDES LUTEA Gaertn. Walls, St Martin's, Jersey, **ARSENE.**

(Mr Pugsley has kindly identified the Fumarias.)

32/1. FUMARIA CAPREOLATA L. Ballast, Old Hartlepool, Durham, 1867, M. A. LAWSON, in *Hb. H. E. Fox*, as *confusa*; Polperro, Cornwall, Mrs PERRYCOSTE.

32/4. F. PURPUREA Pugsl. Howtown, Westmorland, 1880, B. KING.

32/5. F. BORAEI Jord. Selkirk, Miss I. M. HAYWARD and DRUCE.

32/10. F. OFFICINALIS L., var. ELEGANS Pugsl. Limpsfield, Surrey, H. E. FOX; Hook, N. Hants, ST JOHN MARRIOTT; Galafoot, Selkirk, Miss I. M. HAYWARD. Var. WIRTGENI Hausskn. Crayford, W. Kent, ST JOHN MARRIOTT.

35/2. RADICULA SYLVESTRIS Dr. On waste ground, in some plenty, Invergowrie, Angus, DRUCE and CORSTORPHINE; Christchurch, S. Hants, L. B. HALL.

35/3. R. AMPHIBIA Dr. Marsh below Morriston and Llansamlet, Glamorgan, I. SKIRROW, ex WEBB.

†36/2. BARBAREA VERNA Asch. Kingsdown, Kent, 1920, H. E. FOX, as *Brassica*.

36/3. B. BARBAREA (L.), var. TRANSIENS Dr. Flitwick, Beds, H. PHILIPS.

†36/5. B. INTERMEDIA Bor. Dymchurch, Kent, Miss CABLE.

39/4. CARDAMINE FLEXUOSA With., var. UMBROSA (Gr. & Godr.) Dr. Tintern Woods, Monmouth, DRUCE.

†42/10. ALYSSUM MARITIMUM L. The shore, Cummertrees, Dumfries, Miss R. BRIGHT.

†48/3. WILCKIA AFRICANA F. v. M. Splott, Glamorgan, SMITH.

†49/3. SISYMBRIUM ALTISSIMUM L. Marlborough, Wilts, G. PIERSON.

†49/4. S. ORIENTALE L. Didcot, Berks, DRUCE; Ware, Herts, DRUCE and Miss TROWER; Westbourne Poole, Dorset; Lymington, S. Hants, L. B. HALL.

49/6. S. OFFICINALE (L.) Scop., var. LEIOCARPUM DC. Urban District Council Dump, Hitchin, 1927, perhaps casual; White Hall Farm, Littleport, Cambs, 1927, LITTLE.

†49/13. S. LOESELII L. Dagenham, Essex, **MELVILLE** and **DRUCE**; Mardley Heath, Herts, H. **PHILIPS**.

†54/9. BRASSICA ELONGATA Ehrh. Avonmouth, W. Gloster, C. **SANDWITH**.

†54/16. B. JUNCEA Coss. Didcot, Berks; Ware, Herts, **DRUCE**; Dundee, Angus, **DRUCE** and **CORSTORPHINE**.

†54/17. B. DISSECTA Lag. Port Talbot, Glamorgan, 1910, **RIDDELSDELL**.

(Dr E. Almquist has kindly identified the Bursas.)

59/3. BURSA ANGLICA (E. At.). Longforgan, E. Perth, **DRUCE** and **CORSTORPHINE**.

59/7. B. BRITTONII (E. At.). Henley, Oxon; Kettering and Cosgrove, Northants, **DRUCE**.

59/9. B. DRUCEANA (E. At.). Lyndhurst, S. Hants; Glynde, Sussex; Fishguard, Pembroke; Barry, Glamorgan; Burton-on-Trent, Staffs; Charwelton, Northants; near Patshull, Salop; Drayton, Didcot, etc., Berks; Dundee, Angus, **DRUCE**; Guilford, Surrey [31], Miss **TODD**. [Laguna, Teneriffe] **DRUCE**.

59/10. B. GALLICA (E. At.). Yardley, Northants, **DRUCE**.

59/11. B. GERMANICA (E. At.). Aldbourne, Wilts, Miss **TODD**.

59/17. B. MEDITERRANEA (E. At.). Burton-on-Trent, Staffs; Banchory, Kincardine, **DRUCE**.

59/25. B. SINUOSA (E. At.). Didcot, Berks, **DRUCE**; Invergowrie, Angus, **DRUCE** and **CORSTORPHINE**.

59/26. B. TREVIRORUM (E. At.). Galashiels, Selkirk, **DRUCE** and Miss I. M. **HAYWARD**; Garford, Berks; Byfleet, Surrey; Shiplake, Oxon; Culeaze, Dorset, **DRUCE**.

59/27. B. TURONIENSIS (E. At.). Basingstoke, N. Hants; Garford, Berks; Charwelton, Northants; Tamworth, Staffs; Culham, Oxon; Waterville, Kerry; [Lagunetta, S. Bartolemeo, Grand Canary] **DRUCE**.

59/. B. LAEVIGATA (E. At.). Barry, Glamorgan, **DRUCE**.

†61/8. LEPIDIUM PERFOLIATUM L. Stort towing path by Himsdon, Essex, Rev. W. **KEBLE MARTIN**; Glasgow, Lanark, **GRIERSON**.

†61/10. L. CHALEPENSE L. Burton-on-Trent, Staffs, **DRUCE** and Sir **ROGER CURTIS**.

†61/22. L. DENSIFLORUM Schrad. Port Meadow, Oxon, DRUCE, as a forma; Burnham, Somerset, W. D. MILLER; Christchurch, Hants; Aberystwyth, Cardigan, J. H. SALTER.

†61/24. L. NEGLECTUM Thell. Splott, Glamorgan, MELVILLE.

64/2. THLASPI PERFOLIATUM L. Benborough, Worcester, J. HARRIS.

†65/2. IBERIS UMBELLATA L. Hortal. By the railway, Banchory, Kincardine, DRUCE.

†72/1. MYAGRUM PERFOLIATUM L. Hackney, Middlesex, MELVILLE.

†76/1. RAPISTRUM PERENNE All. Malvern railway, Worcester, TOWNDROW.

†76/2. R. ORIENTALE (L.) DC. Waste ground, Holy Island, Northumberland, 1885, H. E. FOX; Beaconsfield, Bucks, Mrs WEDGWOOD; Hythe Quay, Colchester [2381], BROWN and DRUCE, det. THELLUNG; Barry Glamorgan, DRUCE and SMITH, det. THELLUNG.

†78/1. ENARTHROCARPUS LYRATUS DC. Hackney, Middlesex, MELVILLE, det. KEW.

*80/2. RAPHANUS MARITIMUS Sm. Shore at Marshside, just north of Southport, S. Lancs. Long known to grow in W. Lancs on the opposite side of the Ribble between Lytham and St Anne's. It occurs in good quantity. *Crambe* also occurs there, but very sparingly. W. G. TRAVIS in *N.W. Nat.* 181, 1927.

†80/4. R. SATIVUS L. Abundant and variable, Burton-on-Trent, Staffs; Dagenham, Essex; Ware, Herts; Splott, Cardiff, Glamorgan; Didcot, Berks, DRUCE.

†85/1. RESEDA ALBA L. Southport, Lancs, 1927, F. W. HOLDER.

88/1. VIOLA PERSICIFOLIA Roth. Near Woodhall Spa, Lincolnshire, Mrs STEWART. This should replace the record of *montana* on p. 107 of last Report.

88/6. V. CANINA (L.) (ERICETORUM). Aston-le-Walls, Northants, rare in the county, DRUCE. Var. PUSILLA Greg. Snowdon, Carnarvon, DRUCE. Var. SABULOSA Reichb. Snowdon, Carnarvon, DRUCE. Var. CALCAREA Reichb. Tenby, Pembroke, DRUCE and Mrs WEDGWOOD. ×RIVINIANA. Redhill, Northants, DRUCE. ×LACTEA. Dropmore, Bucks, 1927, DRUCE; Budleigh Salterton, Devon, in company with *Carex pulicaris*, *C. flava*, and other marsh plants as a strong-growing plant with ascending stems far stouter than any other violet I have seen, very plentiful in the drier parts of the marsh, Major ORME.

(The Pansies have been kindly determined by Dr Drabble.)

88/14. V. CONTEMPTA Jord. Bucklebury, Berks, DRUCE.

88/15. V. VARIATA Jord. Inchnadamph, W. Sutherland, DRUCE.

*88/15c. V. VECTENSIS F. M. Will. Near Burghfield Common, Berks [Y.129], LOUSLEY. Dr DRABBLE says it is less hairy than the Wight plant but otherwise typical.

*88/17. V. MONTICOLA Jord. On pebbles, Tweedside, Selkirk, July 25, 1911, Miss I. M. HAYWARD. Now identified as this by Dr DRABBLE. Odiham, N. Hants, 1896, Miss C. E. PALMER.

88/19. V. LEJEUNII Jord. Bute, Miss THOMSON; Harleston, Northants, H. G. ALLEN.

88/20. V. LLOYDII Jord. Yspytty Cynfyn, Cardigan, J. H. SALTER.

88/22. V. AGRESTIS Jord. Bury St Edmunds, Suffolk, DRUCE.

88/23. V. SEGETALIS Jord. Wolvercote, Oxon, DRUCE; Tothill, Headley, Surrey, LOUSLEY and WALLACE.

88/24. V. OBTUSIFOLIA Jord. Ballater, S. Aberdeen, DRUCE; Lizard, Cornwall, AMHERST.

88/25. V. LATIFOLIA Drabble. Sandbanks, Poole, Hants, LOUSLEY and HALL.

88/26. V. RURALIS Jord. Faringdon, Berks; Highworth, Wilts, DRUCE.

88/28. V. DESEGLISEI Jord. Near West Wickham, Kent, SWAIN, ex LOUSLEY.

88/31. V. LEPIDA Jord. Barrington, Northumberland; Cyfarllwyd, Cardigan; Cross Michael, Kirkcudbright, H. E. FOX; Thetford, W. Norfolk, DRUCE; Tunbridge, Kent, 1700, *Hb. Du Bois*; Angus; Banchory, Kincardine; Braemar, Ballater, S. Aberdeen, DRUCE.

88/33. V. LUTEA Huds., var. AMOENA Hensl. Kerry Hills, Montgomery and Radnor; Strata Florida, Cardigan, WEBB.

88/34. V. CURTISII Forst. Bed of River Shee, Spital of Glenshee, E. Perth, 1885, H. E. FOX, as *lutea*. Det. Dr DRABBLE. It is the first inland locality in Scotland known to me. Fields near the sea, Strath Carron, W. Ross, H. E. FOX.

88/35. V. PESNEAUI L. & F. Combs, N. Aberdeen, FRASER.

89/4. Polygala dubium Bell. Porne, N. Somerset, June 1927; plentiful on the dunes at Birkdale, S. Lancs, Eclipse Day, 1927; near Winchester, S. Hants; near Kenfig, Glamorgan, Druce.

93/1. Tunica prolifera Scop. Near Northwood, W. Norfolk, 1927. Nicholson remarks "no recent records," Little.

†94/1. Gypsophila porrigens Bois. Par Harbour, Cornwall. Medlin, det. Thellung.

†94/2. G. paniculata L. Old Hartlepool, Durham, H. E. Fox.

†94/5. G. elegans M. Bieb. Waste ground, Galashiels, Selkirk. Druce and Miss I. M. Hayward.

†96/7. Silene gallica L. In a field at Corfe, Dorset, Miss Todd; Par, Cornwall, Medlin; near Petersfield, Hants, B. J. Brooks, det. Thellung.

†96/16. S. dichotoma Ehrh. Near Leicester, O. Bemrose; Grays, Essex, Melville; *Splott, Glamorgan, Smith. Now diminishing in Britain.

†96/31. S. Schafta Gmel. Portland, Dorset, Rayner.

*†98/5. Lychnis macrocarpa B. & R. Splott, Glamorgan, Smith.

*†98/6. L. Preslii Sekera. Appeared in my garden at Ely, Glamorgan, flowering profusely, Smith.

100/6. Cerastium viscosum L., var. rotundatum Dr. Saltash, Cornwall, Canon Vaughan. Var. elongatum R. & F. Saltash, Cornwall, Canon Vaughan.

†100/12. C. tomentosum L. On rubbish near Bristol, W. Gloster; St Donat's, Glamorgan, Druce.

*†102/14. Arenaria balearica L. St Aubin's, Grouville, etc., Jersey, Arsene; Church Road, Holywood, Co. Down, Praeger in *Ir. Nat.* 181, 1927.

*103/9. Sagina Reuteri Lange. Burnham, Somerset, Miller, det. Pearsall.

105/4. Spergularia Bocconei (Sol.) Steud. = atheniensis Asch. = rubra, var. atheniensis Heldr. & Sart. = diandra Lebel = campestris Willk. & Lange, non Asch. Saratoi Lebel = diandra, var. atheniensis Druce = Lepigonum diandrum Kindb. Hythe Quay, Colchester, Brown and Melville; in the stable yard at Newport House, Countess Wear, S. Devon, the situation close to the River Exe high water mark.

The plant appeared shortly after the ground had been dressed with agricultural salt in 1912, and increased until in 1915 the ground was thickly covered, D'URBAN *in litt.*; Barry Docks, Glamorgan, August 1927, DRUCE.

†106/1. POLYCARPON TETRAPHYLLUM L. A single plant. Repeated search failed to produce another. Hitchin, Herts, 1927, LITTLE.

†108/1. CLAYTONIA SIBIRICA L. In a copse by the road between Steep and Petersfield, Hants, C. SANDWITH; still at Bakewell, Derby, 1898, Miss I. M. ROPER.

112/15. HYPERICUM HUMIFUSUM L., var. AMBIGUUM Gillot. Brecon, Miss I. M. ROPER.

115/2. ALTHAEA HIRSUTA L. Reappeared, after 8 or 9 years' absence, near Somerton, Somerset, MILLER.

†116/5. LAVATERA THURINGIACA L. Dundee, Angus, DRUCE and CORSTORPHINE, det. THELLUNG.

117/1. MALVA MOSCHATA L., var. HETEROPHYLLA Lej. Nash Point, Glamorgan, Miss E. VACHELL.

117/2. M. SYLVESTRIS L., var. ACUTILOBA Cel. Near Nash Point, Glamorgan, Miss E. VACHELL.

†117/6. M. AMBIGUA Guss. Belgrave Station, Leicester, 1925, G. J. V. BEMROSE.

†117/7. M. NICAEENSIS All. Barry, Glamorgan, DRUCE, det. THELLUNG.

†117/9. M. PARVIFLORA L. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; Ware, Herts, DRUCE. Var. MICROCARPA (Pers.) Loscos. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; Splott, Glamorgan, DRUCE and SMITH.

*†117/11. M. HISPANICA L. Splott, Glamorgan, SMITH.

†127/5. GERANIUM PHAEUM L. Roadside near the common, Marianglas, Anglesey, Miss R. BRIGHT; Hoe, Gomshall, Surrey, HALL; Rotherwick, N. Hants, Miss I. M. ROPER.

†127/6. G. ENDRESSI Gay. This is the *G. nodosum*, teste THURSTON, of Davey's *Flora of Cornwall*, of which specimens are in Herb. Kew.

127/14. G. ROBERTIANUM L. Plants with petals notched at Studland and Cosgrove, Dorset, HALL.

†131/1. LIMNANTHES DOUGLASII Br., var. SULFUREA (Loud.) Dr. Cannock, Staffs, Sir **ROGER CURTIS**.

†132/9. OXALIS LATIFOLIA H.B.K. La Haute and in two adjacent fields in great plenty, Jersey, **ARSENE**.

†133/2. IMPATIENS BIFLORA Walt. Shapwick, Dorset; Christchurch, S. Hants, **HALL**.

†133/4. I. GLANDULIFERA Royle. In profusion on the banks of the Usk, Abergavenny, Monmouth, Miss E. **POST**; roadside near Hedge Court Pond, Surrey, **LOUSLEY** and **WALLACE**; Tolpuddle, (*candida*), Dorset, Miss I. M. **ROPER**.

142/2. ACER CAMPESTRE L., var. INCISIFOLIUM Dr. Dudley, Worcester; Redhill, Northants. Var. LOBATUM Pax. Marlborough, Wilts, Mrs **WEDGWOOD**.

†145/2. LUPINUS ALBUS L. Burton-on-Trent, Staffs, **DRUCE**. Probably this, **THELLUNG**.

†145/4. L. ANGUSTIFOLIUS L. Christchurch, S. Hants, **DRUCE**.

151/2. ONONIS REPENS L., var. MITIS (L.). (PROCURRENS Wallr.). Slapton Sands, Devon; Kenfig and Barry, Glamorgan; Albury, Oxon, **DRUCE**.

151/3. O. SPINOSA L. (CAMPESTRIS). ALBIFLORA. Between Marlbrough and Chippenham, Wilts, H. B. **WILLOUGHBY SMITH**.

153/1. MEDICAGO FALCATA L. Near Aylesford, Kent, Mrs **DAVIES**; Cromer, Norfolk; Rhyl, Flint, Miss B. **ALLEN**.

†153/4. M. LAPPACEA Desr. Abingdon, Berks, **DRUCE**.

153/4. M. APICULATA Willd. Shipston-on-Stour, Worcester, J. H. **SALTER**.

153/7. M. LUPULINA L., var. UNGUICULATA Ser. Parkstone, Dorset, **HALL**.

155/2. TRIFOLIUM PRATENSE L., var. PARVIFLORUM Bab. Barry, Glamorgan, Miss I. M. **ROPER**.

155/3. T. OCHROLEUCON Huds. Great Casterton, Rutland, **BEMROSE**.

†155/15. T. HYBRIDUM L. (FISTULOSUM). Ashby-de-la-Zouch, Leicester, **DRUCE**. Var. PHYLLANTHUM. Portishead Dock, N. Somerset, Miss **TODD**; Cardiff, **DRUCE**.

†155/15. T. ELEGANS Savi. Dagenham, Essex, **MELVILLE**; Barry, Glamorgan; Dundee, Angus, **DRUCE**. The two latter have hollow stems.

155/16. T. repens L., var. rubescens Seringe. Walton, Yorks, Miss Todd.

†155/19. T. agrarium L. Bute; Dundee, Angus, Druce.

†155/37. T. resupinatum L. Buriton, Surrey, Biddiscombe; Bristol, W. Gloster, C. Sandwith.

†155/38. T. tomentosum L. Bristol, W. Gloster, C. Sandwith.

160/6. Lotus tenuis Kit., var. sabulicola Rouy. Besilsleigh, Berks, Druce.

*†160/7. L. hispidus Desf. Barry, Glamorgan, Smith.

†166/6. Astragalus boeticus L. Par, Cornwall, Medlin.

†170/1. Coronilla varia L. Barmouth, Merioneth, H. Walker. Still existing at Ware, Herts, and Dundee, Angus, Druce; Prestatyn, Flint, Miss B. Allen.

†170/3. C. Scorpioides Koch. Par, Cornwall, Medlin.

*†171/1. Ornithopus compressus L. Barry, Glamorgan, Smith.

*†171/5. O. pinnatus (Mill.) Dr. Barry, Glamorgan, Smith.

†176/2. Vicia tenuifolia Roth. Leith, Midlothian, Druce.

176/4. V. Orobus DC. On Mendip as the violet-coloured form, and one plant with pure white flowers, on the Society's excursion, June 1927, Druce and Miller. In Forfarshire the flowers have a pinkish-purple tint, f. *rubescens*, Druce.

†176/9. V. lutea L., var. caerulea Archangeli. Ware, Herts, Druce.

†176/12. V. sativa L., var. cordata Wulf. Salthouse, Norfolk, 1890, T. A. Cotton. Var. app. triflora Rouy. Christchurch, S. Hants, Druce.

176/13. V. angustifolia Reich., var. segetalis Koch. Hackney, Middlesex; Birkdale, S. Lancs, Druce. Var. Bobartii (Forst.). Christchurch, S. Hants, Druce.

*†176/16. V. benghalense L. Iver, Bucks, Melville.

†177/1. Lens Lens (L.). Aylestone gas works, Leicester, G. J. V. Bemrose.

†178/1. Lathyrus latifolius L. Relic of a garden, St Donats, Glamorgan, Druce.

†178/3. L. TUBEROSUS L. Waste ground, Rhyl, Flint, DALLMAN. In a field adjoining Sedbury Park, Chepstow, T. W. BRISCOE in *Gard. Chron*. 73, 1927. It was recognised by our member, Dr Shoolbred [not Schoolbred] in a nosegay of wild flowers which were on exhibition at the Tidenham Flower Show in August 1926. On p. 136, Mr W. E. Wright says it is pretty well known through the Wye Valley around Monmouth and the Forest of Dean, and it is often exhibited in the village shows. Mr White (*The Bristol Flora*, 253) considers it an alien in his area. Our member, Mrs Thatcher, on p. 167, adds the Keynsham locality in Somerset, and to those may be added Burton-on-Trent, Staffs, and Peppard, Oxon, DRUCE.

†178/23. L. ODORATUS L. Garden relic, St Donats, Glamorgan; Banchory, Kincardine, DRUCE.

†178/26. L. NIGER L. Planted in the Park at Great Tew, Oxon, June 1927, DRUCE.

183/4. PRUNUS CERASUS L. (CERASUS ACIDA Bork.). Wild near Marlborough, fruiting freely, Mrs WEDGWOOD. A distinct species from *avium*. Near Cross Hands, Carmarthen, WEBB.

†183/8. P. CERASIFERA Ehrh. In some plenty about Salisbury, Wilts, Miss E. H. STEVENS. The glossy varnished stems distinguish it, *inter alia*, from the Sloe and Plum.

†184/10. SPIRAEA SALICIFOLIA L. Abundant along Telforrd's Road, Denbighshire, WEBB; Loch of Skene, S. Aberdeen, FRASER.

184/11. S. ULMARIA L., var. DENUDATA Boenn. Dundee, Angus, DRUCE and CORSTORPHINE; Culworth, Northants, DRUCE.

†185/156. RUBUS SPECTABILIS Pursh. Lessennan, Donegal, RAYNER.

†185/158. R. NUTKANUS Moç. Craigmore, near Rothesay, Bute, GRIERSON. An older name is *parviflorus* Nuttall.

*188/1. FRAGARIA MOSCHATA Duch. Naturalised at Great Tew, Oxon, DRUCE.

188/2. F. VESCA L., var. ALBESCENS. In some plenty at Wroughton, N. Wilts, E. W. M. MAGOR.

189/4. POTENTILLA ARGENTEA L. Ryton, E. Gloster, HAINES.

*189/6. P. VERNA L. Bouley Bay, Jersey, 1927, GAMBIER-PARRY.

†189/11. P. NORVEGICA L. Portishead, N. Somerset, Miss TODD; Burton-on-Trent, Staffs, DRUCE.

†189/13. P. RECTA L. Par, Cornwall, REES.

189/25. P. palustris (L.) Scop., var. villosa (Lehm.) Dr. (sericea Wolf). Wareham, Dorset, Miss **I. M. Roper**.

190/2. Alchemilla pratensis Schmidt. Harlington, Derby; Stodday, Broughton, Lancs; Banchory, Kincardine, **Druce**; Pitsligo, N. Aberdeen, **Fraser**.

*190/3. A. curtiloba Buser. Banchory, Kincardine, **Druce**.

190/4. A. minor Huds. Windermere, Westmorland, **Druce**.

*190/5. A. pastoralis Buser. In the grounds of Arley Castle, Worcester, Lady **Joan Legge** and **Druce**.

190/8. A. alpestris Schmidt. Brecon Beacon; near Boughrood, Radnor; Giffnock, Renfrew; Penrith, Cumberland; Ingleborough, Fountain's Abbey, Yorks; Stodday, Lancs; Feugh, Banchory, Kincardine; Waterville, Kerry, **Druce**; Tummel, Perth, **Thornton**; Clapham, Yorks, Miss **Todd**.

†191/3. Agrimonia Agrimonoides L. Still going strong at Welbeck, Notts, **Goulding**.

193/4. Poterium officinale A. Gray. Penderyn, Brecon, Miss **I. M. Roper**.

(Lt.-Col. A. H. Wolley-Dod has kindly named the Roses.)

194/5. Rosa stylosa Desv. Under the type, Graffham, Hunts, 1885, **E. F. Linton**. Var. chlorantha Rouy? Shillingston, Dorset, 1915, **W. M. Rogers**.

194/6. R. canina L., var. sphaerica (Gren.) Dum. Cwm Nes, Radnor, **Cumming**. Var. nemophila (Déség. & Ozan.) R. & C. Rugby, Warwick, **Cumming**. Var. senticosa Baker (? of Ach.), f. oxyphylla W.-D. Lane near How Hill Quarry, N.W. Yorks, 1886, **Bailey**. Var. mucronulata (Déség.) R. & C. Culworth, Northants, **Druce**. Var. insignis (Déség. & Rip.) R. & C. Cwm Nes, Radnor, **Cumming**. Var. stipularis Mérat. Brinklow, Warwick, **Cumming**.

194/7. R. squarrosa Rau (dumalis), var. adscita (Déség.). Cerrig Haffes, Brecon, **Ley**. Var. stipularis Mér. Brinklow, Warwick, **Cumming**.

194/8. R. andegavensis Bast. Bracklinn Falls, Callander, W. Perth, **Bailey**; Byfleet, Surrey, Lady **Davy**. Var. Schottiana (Ser.). Chambercombe, N. Devon, 1891, **Bailey**.

194/9. R. Blondaeana (Rip.). Woldingham, Runnymead, Surrey, **Fraser**. Var. vinacea Baker, f. Beatricis. Near Tenbury, Worcester, 1892, **Bailey**, as *dumalis*; Chinnor, Oxon, 1927, **Druce**.

194/10. R. DUMETORUM Thuill., var. HISPIDULA (Rip.). Kintbury, Berks, **DRUCE**. Wolley-Dod will probably segregate this from *dumetorum* in his next paper. Var. CALOPHYLLA Rouy. Storey Arum, Brecon, Miss I. M. **ROPER**.

194/11. R. DESEGLISEI (Boreau), var. MERCICA (W.-D.). Manyfold valley, opposite Wetton Mill, Staffs; near Darly Dale, Derby, 1891, **BAILEY**, as *caesia*.

194/12. R. GLAUCA Vill. Gairloch, W. Ross, 1883, **BAILEY**, as *dumalis*. Var. SUBCANINA (Christ). Between Ayton and Cairncross, Berwick, **BAILEY**, as *dumalis*; St Andrews, Fife, **DRUCE**; Cwm Nes, Radnor, **CUMMING**. ? var. COMPLICATA, i.e. COMPLICATA with reflexed sepals, Aviemore, Easterness, Miss I. M. **ROPER**, teste W.-D. Var. SUBCRISTATA (Baker). Cwm Nes, Radnor, **CUMMING**. Var. REUTERI (Godet), f. Brookham Common, Surrey, **FRASER**.

194/13. R. CAESIA Sm. (CORIIFOLIA Fr.). Cwm Nes, Radnor, **CUMMING**. Var. IMPLEXA (Gren.). Near Lake Sawrey, Lancs, 1883, **BAILEY**, as *Reuteri*. Var. BAKERI (Déség.), f. SETIGERA W.-D. Shandon, Dumbarton, 1897, **BAILEY**, as *Watsoni*. Var. CELERATA (Baker). Between Hartington and Scaldersitch, Staffs, 1894, **BAILEY**.

194/14. R. MICRANTHA Sm., var. OPERTA Pug. Crabwood, near Winchester, S. Hants, **DRUCE** and Rt. Hon. H. **BAKER**.

194/15. R. EGLANTERIA L., var. ROTUNDIFOLIA (Rau). Strathpeffer, E. Ross, **BAILEY**. A record for Scotland. Var. APRICORUM (Rouy). Magilligan, Londonderry, **BAILEY**; near Peebles, **BAILEY**.

194/16. R. ARVATICA W.-D. Hogsback, Surrey, Lady **DAVY**; near Ayton Wood House, Berwick, 1900, **BAILEY**. The latter may be *sclerophylla* (Scheutz), teste W.-Dod.

194/18. R. TOMENTELLA Lem. Newark Abbey, Surrey, Lady **DAVY**. Var. CARIONII. Field by Brandon Wood, Warwick, **CUMMING**.

194/19. R. PSEUDO-CUSPIDATA (Crép.). Mill of Boyndlie, N. Aberdeen, **FRASER**.

194/20. R. OMISSA Déség. Rothiemurchus, Easterness, towards PSEUDO-MOLLIS E.G.B., Miss I. M. **ROPER**. Var. RESINOSOIDES Crép. Aviemore, Easterness, Miss I. M. **ROPER**; near Melrose, Roxburgh, **BAILEY**. Var. SUBMOLLIS. Kenmare, Kerry, **DRUCE**.

194/21. R. VILLOSA L. Railway cutting between Great and Little Cheverhill, near Devizes, Wilts, **DRUCE** and Rev. W. **KEBLE-MARTIN**. Var. GLANDULOSA W.-Dod. Mill of Boyndlie, N. Aberdeen, **FRASER**.

194/23. ×R. SABINI (Woods). Den of Aberdour, N. Aberdeen, **FRASER**; Loch Ranza, Arran, Mrs **WEDGWOOD**. ×R. LAEVIGATA (Baker). Den of Aberdour, N. Aberdeen, **FRASER**.

†194/26. R. RUGOSA Thunb. Penrice, Glamorgan; Keswick, Cumberland, **WEBB**.

†197/2. COTONEASTER MICROPHYLLA Wallich. In some plenty and naturalised at Derrynane, Co. Kerry, **DRUCE**; Hucknall, Notts, **BULLEY**.

†197/3. C. SIMONSII Baker. In a hedge, on a chalk slope with Buckthorn, near Highclere, N. Hants, Rev. C. E. **CRUTTWELL**.

198/4. AMELANCHIER VULGARIS Moench. Crag above Longrigg Brow, Westmorland, Rev. W. **KEBLE-MARTIN**.

*199/10. SAXIFRAGA HYPNOIDES L. Lugnaquillia, Co. Wicklow, at 2000 feet altitude, J. P. **BRUNKER** in *Ir. Nat.* 254, 1927.

*207/7. RIBES SANGUINEUM Pursh. Charwelton, Northants; Banchory, Kincardine, **DRUCE**.

210/1. COTYLEDON UMBILICUS L. Grew at 1800 ft. on the crags N.E. of Pistyth Rhainon, Berwyn Mountain, Denbighshire, **WILSON**.

†211/7. SEDUM ALBUM L. Established on limestone between Prestatyn and Meliden, Flint, J. D. **MASSEY**.

211/12. S. VILLOSUM L. Near Grantown, Elgin, alt. 1500 ft., Miss **WILKINSON**.

220/2. EPILOBIUM HIRSUTUM × MONTANUM. Lambridge, Oxon, **DRUCE** and Mrs **WEDGWOOD**.

220/6. E. LAMYI F. Schultz. Willesborough Lees, Ashford, Kent, **FOGGITT**, Lady **DAVY** and Miss **BACON**; Beaconsfield, Bucks, N. **SANDWITH** and Mrs **WEDGWOOD**, the second locality in the county.

220/8. E. ROSEUM Schreb. Ware, Herts; Boughrood, Radnor; Burton, Staffs, **DRUCE**.

*220/13. E. ALPINUM L. (with ALSINIFOLIUM). Slopes of Mickle Fell, N.W. Yorks, just within the Yorkshire boundary, **LOUSLEY**.

†221/1. LUDVIGIA PALUSTRIS Ell. Manchester Docks, S. Lancs, **LESLIE ADAMS**.

†223/3. OENOTHERA ODORATA Jacq. Coverack, Cornwall, 1910, H. E. **FOX**, as *biennis*.

†223/7. OE. SINUATA L. (LACINIATA). Kidderminster, Worcester, Rev. J. **ADAM**; Bristol, W. Gloster, C. & N. **SANDWITH**; Par, Cornwall, **THURSTON**.

†224/1. FUCHSIA RICCARTONI Hort. Berehaven, Co. Cork, quite naturalised, **DRUCE**.

†245/6. BUPLEURUM LANCIFOLIUM Hornem. Burnham-on-Sea, Somerset, **MILLER**.

247/5. APIUM INUNDATUM Reichb., f. FLUITANS (Fr.). Burghfield Common, Berks, very large and floating in islands some yards from the shore, **LOUSLEY**. Rather a condition than a true variety.

261/1. CHAEROFOLIUM SYLVESTRE (L.) (ANTHRISCUS), var. ANGUSTISECTA Dr. Dundee, Angus; Ballater, S. Aberdeen, **DRUCE**.

265/3. OENANTHE CROCATA L. Caused deaths of a boy and girl at Bryncoch, Glamorgan, in 1927, **WEBB**.

270/1. MEUM ATHAMANTICUM Jacq. In plenty at the head of the Lime Valley, Westmorland, **FOGGITT**.

†277/1. HERACLEUM MANTEGAZZIANUM S. & L. Iver, Bucks; Dagenham, Essex, **MELVILLE**. See plate. Still abundant at Dundee, Angus, overlooking the railway, **DRUCE**.

*†283/8. CAUCALIS LATIFOLIA L. Barry, Glamorgan, **SMITH**.

284/1. HEDERA HELIX L., var. SARNIENSIS Dr. Sheen, Kenmare, Kerry, **DRUCE**, similar to the Guernsey plant; Nash Point, Glamorgan, **DRUCE** and Miss **VACHELL**. Miss **TODD** sends from Ingleborough a form [15] approaching var. BOREALIS Dr., but the leaves are broader. It differs, too, in the long acuminate point to the leaves of the barren stems, **DRUCE**.

286/1. ADOXA MOSCHATELLINA L. T. A. **SPRAGUE** gives the morphology and taxonomic position of this species which he puts in the family Adoxaceae, allied to the Saxifragaceae. Other botanists have placed it near the Caprifoliaceae. See. *Journ. Linn. Soc.* 471, 1927.

†296/5. GALIUM PUMILUM Murr. Near Wellington College, Berks, 1925, H. P. **MONCKTON**; near Sapperton, E. Gloster, **HAINES**. It is an increasing colonist.

†298/6. ASPERULA CILIATA Rochel. Near St Donats, Glamorgan, June 1927, **DRUCE**; Magilligan, Co. Derry, ex Hon. Mrs A. **LEITH**; Prestatyn, Flint, Miss B. **ALLEN**.

304/2. VALERIANELLA ERIOCARPA Desv. Hayle, Cornwall, **MELVILLE**.

†306/1. DIPSACUS SYLVESTRIS Huds. Near Newport, Isle of Wight, for several years, **J. W. LONG**.

†311/1. GRINDELIA SQUARROSA Dunal. Beaconsfield, Bucks, in a chicken run, **Mrs WEDGWOOD**.

312/1. SOLIDAGO VIRGAUREA L., var. LANCEOLATA Dr. Banchory, Kincardine, July 1927, **DRUCE**; Bolton Abbey, Yorks, 1863, **HAYNE**. Var. CORYMBOSA Dr. Near Roundstone, Galway Bay, Galway, **DRUCE**.

314/1. BELLIS PERENNIS L., var. vel lusus PROLIFERA. The Hen and Chicken Daisy. The Common, Marianglas, Anglesey, **Miss R. BRIGHT**.

(The Asters are named by Dr Thellung.)

†318/1. ASTER SALIGNUS Willd. By the Esk, Stracathro, Angus, 1919, **R. & M. CORSTORPHINE**.

†318/3. A. LONGIFOLIUS Lam. Banks of Tay below Perth, **BOSWELL SYME**.

†318/4. A. NOVI-BELGII L. Derwentwater, Cumberland, **M. EDWARDS**.

†318/6. A. LANCEOLATUS Willd. Marston, Oxon, **DRUCE**.

†318/9. A. PUNICEUS L. Dundee, Angus, 1926, **R. & M. CORSTORPHINE**.

†318/11. A. VERSICOLOR Willd. By the Esk, Brechin, Angus, **R. & M. CORSTORPHINE**.

†318/14. A. PRENANTHOIDES Muhl. Winchester, Hants, **Miss TODD**.

318/19. A. TRIPOLIUM L., var. LONGICAULIS Rouy, Fouc. & Camus. Poole, Dorset, **WADE**.

†320/5. ERIGERON ANNUUS (L.) Pers. Erith, W. Kent, **ST JOHN MARRIOTT**. Det **A. THELLUNG**.

324/2. FILAGO APICULATA G. E. Sm. Parkstone, Dorset, **HALL**.

*†328/1. GNAPHALIUM LUTEO-ALBUM L. Barry, Glamorgan, **SMITH**.

†328/6. G. UNDULATUM L. Par Harbour, Cornwall, **MEDLIN**.

333/1. INULA HELENIUM L. St Ives, Cornwall, **AMHERST**; in a field between Melksham and Westbury, Wilts, **E. JENKINSON**.

†339/4. AMBROSIA TRIFIDA L. Burton-on-Trent, Staffs, **DRUCE** and **Sir ROGER CURTIS**.

†351/1. Guizotia abyssinica (L. f.) Cass. Ballast, Old Hartlepool, Durham, 1867, H. E. Fox.

353/2. Bidens tripartita L., var. integra Koch. Near Winchester, Hants, Rayner.

†353/4. B. pilosa L. Hortal. Waste places, St Helier, Jersey, Arsène.

†354/1. Galinsoga parviflora Cav., var. adenophora Thell. Bristol, E. Gloster, C. & N. Sandwith.

†356/1. Hemizonia pungens T. & G. In Flint, near the Cheshire border, E. J. Haynes Thomas; Didcot, Berks, Druce.

†362/2. Tagetes minuta L. Newport, Isle of Wight, Long.

†364/1. Anacyclus clavatus (Desf.) Pers. Par, Cornwall, Medlin.

†364/2. A. radiatus Lois. Dagenham, Essex, Melville.

365/1. Achillea Millefolium L., var. lanata Koch. Holwick, N.W. Yorks, Lousley. Var. conspicua Dr. This wet year of 1927 has been marked by the profuse flowering of the Yarrow which has been a prominent feature in Britain. The variety with larger ligules has necessarily created the more striking effect. It has been noted near Southborne, S. Hants; Wareham, etc., Dorset; Abingdon, etc., Berks; Culham, Tetsworth, etc., Oxon; Byfield, Northants; Walsall, Staffs; Dudley, etc., Worcester; near Bristol, W. Gloster, etc. The forma rosea grows with it and occurs in remarkably pretty tints, Druce.

367/1. Diotis maritima Cass. H. W. Kew has found this rare British species near Penzance this year.

†368/1. Anthemis tinctoria L. Waste ground near Walsall, Staffs, Sir Roger Curtis; Easthaven, Angus, R. & M. Corstorphine.

368/2. A. nobilis L., var. discoidea Boiss. Barden Lane, Burnley, S. Lancs, Travis.

†369/1. Cladanthus arabicus (L.) Cass. Par, Cornwall, Medlin.

371/1. Matricaria inodora L. As a proliferous condition, Cardiff, Glamorgan, Druce.

†371/3. M. suaveolens Buch. Hambledon, Bucks; Eye, Wortham, Stuston, Suffolk, H. L. Green.

†371/5. M. decipiens (F. & M.) C. Koch. Burton-on-Trent, Staffs, 1926, Druce.

†378/16. Artemisia annua L. Iver, Bucks, Melville.

†378/18. A. gnaphalodes Nutt. Edington Junction, Somerset, Miller.

†380/2. Petasites albus Gaertn. Plentiful near Banchory, Kincardine, Druce.

†381/1. Doronicum Pardalianches L. Great Tew, Oxon, naturalised; several places about Banchory, Kincardine, Druce.

†383/1. Senecio sarracenicus L. Killycreen Hill, Ramelton, Donegal, F. R. Browning.

383/3. S. aquaticus × Jacobaea = × Ostenfeldii Dr. Swaythling Camp, S. Hants, Rayner.

383/4. S. erraticus Bert. Holmesby, S. Hants; Southcote, Berks; not quite typical; Shefford, Berks, 1887 (? *intermedius* Dr.), Druce.

†383/7. S. squalidus L. Rapidly spreading in Staffordshire and Worcestershire, Druce. × vulgaris. Portishead, Somerset, Miss Todd; Didcot, Berks; Burton-on-Trent, Staffs, Druce; Avonmouth, Bristol, West Gloster, C. & N. Sandwith.

†383/8. S. viscosus L. Plentiful on waste ground, Didcot, Berks, the most northerly station in the county yet noticed. Here it is adventive, Druce.

383/9. S. sylvaticus L., var. auriculatus Meyer. Silchester Common, N. Hants, Lousley.

383/12. S. Doria L. In a hedge at Colonsay, far from houses, but not typical, Hon. Mrs Guy Baring.

†383/15. S. vernalis W. & K. × vulgaris. Barry, Glamorgan, Druce. Cf. *vernalis* × *vulgaris*, teste Thellung.

†386/1. Cryptostemma Calendula (L.) Dr. Bristol, W. Gloster, C. Sandwith; *Barry, Glamorgan, Smith.

393/1. Arctium majus Bernh. Wretton Ferry, W. Norfolk; White Hall Farm, Littleport, Cambridge, Little.

395/2. Carduus acanthoides L. × nutans. Shapwick, Dorset, Hall; Loddon, Norfolk, Miss Todd.

†395/3. C. pycnocephalus L. Hackney, Middlesex, Melville.

*†396/1. Cirsium eriophorum Scop. A solitary specimen in a field at Banchory, Kincardine. This handsome species was first recorded for

Scotland by Sibbald in *Scotia Illustrata* 15, 1684, as *Carduus tomentosus Corona fratrum dictus*, by the seaside betwixt Blackness and Queensferry. But it is not a native species of Scotland and is of very rare adventive occurrence, Druce.

396/8. C. setosum M. Bieb. St John's Graveyard, Jersey, Arsene; Christchurch, Hants, Hall.

396/9. C. palustre Scop., var. ferox Dr., f. alba. Ridge, Dorset; Berkhampstead, Herts. Type ferox also grew at Banchory, Kincardine, and Brecon, Druce.

402/1. Serratula tinctoria L., var. albus. Among stones in river bed Upper Teesdale, Durham, Miss A. Wilkinson; by the Spey, Aviemore, Easterness, Miss I. M. Roper.

†404/3. Carthamus tinctorius L. St Cyrus, Kincardine, R. & M. Corstorphine; St Dennis by Padstow, Cornwall, Druce.

(Mr C. E. Britton has kindly identified the Centaureas.)

*405/7. Centaurea pratensis Thuill. Crabtree, S. Hants; Ivinghoe, Bucks, Druce; L'Eree, Guernsey, 1888, M. Dawber.

405/8. C. nigra L., var. obscura Jord. Kennmare, Kerry; Berehaven, Co. Cork; Wexford; Boughrood, Radnor; Brecon; Nash, Glamorgan, Druce; Ripon, Yorks, Miss Todd. f. radiata. Cunningmaker, Dumfries; Culeaze, Dorset, Druce.

*405/9. C. Drucei C. E. Brit. Burghfield, Berks, Lousley.

405/11. C. nemoralis Jord. Polzeath, Cornwall, H. E. Fox; Bardfield, Essex, Druce. Narrow leaved form, Blewbury, Berks, Druce. f. radiata. Rheidol, Cardigan; Dumfries. f. alba. Strome Ferry, W. Ross, Druce. Var. diversifolia C. E. Brit. Ashmansworth, N. Hants, Barton. f. radiata. Ottery St Mary, Devon, H. E. Fox. Var. subintegra C. E. Brit. S. Tawton, Devon, H. E. Fox.

†405/31. C. Solstitialis L. Burton-on-Trent, Staffs, Druce and Sir Roger Curtis; Prestatyn, Flint, Miss B. Allen.

*†408/2. Scolymus maculatus L. Splott, Glamorgan, Smith.

†409/1. Cichorium Intybus L., var. glabratum (Presl). Banchory, Kincardine, Druce.

410/1. Arnoseris minima Schw. & Koerte. Near Pocklington, East Riding, Yorkshire, F. A. Mason, Leeds, hon. secretary of the Yorkshire Naturalists' Union, has made one of the most important discoveries of recent years in the phanerogamous plants of the county of Yorkshire. On the excursion of the Union to Allerthorpe, East Riding of Yorkshire, on the 2nd July 1927, he found *Arnoseris minima* on a sandy stretch of land near the Common. The first specimen Mr Mason gathered was inadvertently lost, so early in September he revisited the locality and noted this plant well-established there. I received specimens on the 6th September in full flower, and also specimens of the ground flora associated with *Arnoseris*. The plants were *Crepis capillaris*, *Calluna vulgaris*, *Gnaphalium sylvaticum*, and *Filago minima*, the larger plants being *Cytisus scoparius* and *Ulex europaeus*. Neither Baker's "Flora of North Yorkshire" nor Fraser Robinson's "Flora of the East Riding" makes any mention of this plant, but in Lees' "Flora of West Yorkshire" there is a very old and unconfirmed record of its occurrence in some barren fields in Yorkshire. As this statement is so extremely indefinite and has not been verified for nearly 300 years we must consider that Mr Mason's discovery establishes a new record not only for the East Riding but for the county. *Arnoseris* is recorded from twenty-four Watsonian vice-counties in "Topographical Botany." R. J. Flintoff.

415/2. Picris Hieracioides L., var. umbellata Schultz (var. arvalis (Jord.)). Jersey, Arsene.

416/5. Crepis capillaris Wallr. Type, Cardiff Docks, Glamorgan, 1926, Druce. Var. anglica Druce & Thell. Coverack, Cornwall, H. E. Fox; Corbière, Jersey; Splott, Glamorgan; Angus; Selkirk; Didcot, Berks, Druce. Sub-var. griseola Thell. Big Sand and Mellon Charles, W. Ross, Druce; Burnham-on-Sea, Somerset, Miller; Reading, Berks; Banchory, Kincardine, Druce.

417/1. Tolpis barbata Gaertn. Alien, Europe. Barry, Glamorgan, Smith.

†419/8. Hieracium aurantiacum L. Dolwyddelan and Pontypant, Carnarvon, Webb.

*419/218. H. stictophyllum Dahlst. Lechwidd Mawr, Cardigan, Salter.

419/229. H. cantianum F. J. H. Angley Wood, Kent, Foggitt.

423 . Taraxacum officinale L., aggr. An abnormal form with 2-3 bracts on the scape, Sewage Farm, Hitchin, Herts, 1927, Little.

(The Taraxaca have been kindly determined by Dr H. Dahlstedt.)

423/1. T. brachyglossum Dahlst. Burton-on-Trent, Staffs; Penarth, Glamorgan, Druce; Machen, Monmouth [135], Wade.

423/2. T. decipiens Raunk., forma. Pennard, Glamorgan, Druce; Morlais Castle, Glamorgan [146], Wade; Mynydd Machen, Monmouth [124], Wade.

423/4. T. FULVUM Raunk. Burton-on-Trent, Staffs; Kettering, Northants, DRUCE; Leckwith, Glamorgan [138, 140], WADE.

423/6. T. LACISTOPHYLLUM Dahlst. Dagenham, S. Essex; Didcot, Berks; Aston-le-Walls, Northants; near Denshanger, Bucks; Cardiff, Glamorgan, DRUCE.

423/9. T. LIMBATUM Dahlst., modif. Swansea, Glamorgan, DRUCE; Leckwith, Glamorgan [135], WADE.

423/19. T. CROCEIFLORUM Dahlst. Nearly allied to this, Cardiff, Glamorgan; *Garford, Berks, DRUCE.

423/20. T. CROCEUM Dahlst. Interesting form allied to this, Brecon, DRUCE.

423/21. T. DEVIANS Dahlst. in Arkiv. för Bot. 57, 1904. A form closely related to this [P.67], Tackley, Oxon, DRUCE.

423/23. T. FAROENSE Dahlst. Penally, Pembroke, DRUCE.

423/26. T. MACULIGERUM Lindb. f., forma. Taf Fechan, Brecon, WADE.

423/29. T. NORDSTEDTII Dahlst. Snowdon, Carnarvon; Kenfig, Glamorgan; Swallowfield, Berks, probably this; Ouse meadows, Denshanger, Aston-le-Walls, Charwelton, Northants, DRUCE; Merthyr Mawr, Glamorgan [149]; Talgarth, Brecon [148], WADE; Friezland, Yorks, 1891, WHELDON.

423/30. T. OXONIENSE Dahlst. Baldon, Oxon; Burghfield, Berks, DRUCE.

423/34. T. SPECTABILE Dahlst., modif. Maen Madoc, Brecon [108], WADE.

423/37. T. ALATUM Lindb. f. Shellingford, Berks; Thame, Oxon; Cothill, Berks, modif.; Biddesden, Wilts, DRUCE.

423/39. T. AMBLYCENTRUM Dahlst., modif. Cherry Hinton, Cambridge; *Burghfield, Berks; Redhill, Northants, as forma; *Merton, Oxon; *Buckingham, Bucks, DRUCE.

423/40. T. ANCISTROLOBUM Dahlst. Cardiff [103, 104, 106, 120]; Cathays Park, Cardiff [103, 104, 106]; Cardiff Castle, Glamorgan [120], WADE.

423/51. T. CYANOLEPIS Dahlst. Swansea, Glamorgan, DRUCE.

423/51. T. DAHLSTEDTII Lindb. f., modif. Tredegar Park roadside, Newport, Monmouth [128], WADE.

423/52. T. DILATATUM Lindb. f. Wansford, Northants; *Coombe Wood, Oxon, modif.; Winton, S. Hants, nearly related; Burghfield, Berks; *Hambledon, Bucks; Stibbington, Hunts, forma; Banchory, Kincardine, DRUCE.

*423/55. T. EXPALLIDIFORME Dahlst. Caerphilly, Glamorgan, WADE; Cathays Park, Cardiff [102]; Shellingford, Berks, modif.; Culham, Oxon, DRUCE.

423/59. T. GELERTII Raunk. Baldon, Oxon, "seems to be a form of this," DRUCE.

423/61. T. HAMATUM Raunk. Caerphilly, Cathays Park, Cardiff [101]; Sully [121]; Leckwith, Glamorgan [126], WADE; Redhill, Northants, DRUCE.

423/63. T. INTRICATUM Lindb. f. Very nearly related to this, Tackley, Oxon; Radyr, Glamorgan, DRUCE.

423/64. T. KJELLMANNII Dahlst., forma. Tenby, Pembroke; Invergowrie, Angus, related to this; Banchory, Kincardine; Garford, Berks, DRUCE.

423/66. T. LACINIOSUM Dahlst., modif. Charwelton, Redhill, Northants; Cosgrove, Northants, forma, DRUCE; a small form at Marshfield, Monmouth [112], WADE.

423/67. T. LAETICOLOR Dahlst. Probably this at Biddesdon, Wilts, DRUCE; nearly allied to this at Marshfield, Monmouth, WADE.

423/72. T. LONGISQUAMEUM Lindb. f., forma. Charwelton, Northants; Roydon, Herts; a somewhat allied form at Tackley, Oxon, DRUCE.

423/75. T. MUCRONATUM Lindb. f. Allied form at Garford, Berks; St Giles, Oxon, DRUCE.

423/77. T. PALLESCENS Dahlst. Marshfield, Monmouth [111, 112, 115, 116], WADE; Tackley, Oxon, modif. [PP.40]; Aston-le-Walls, Northants [P.51], a related form; Stow Wood, Baldon, Oxon, DRUCE; Leckwith, Glamorgan [121], WADE

423/80. T. POLYODON Dahlst., modif. Barry Docks, Cardiff, Glamorgan [167], WADE; Tackley, Oxon [PP.67], DRUCE.

423/82. T. PRIVUM Dahlst., forma. Caerphilly [101], Tredegar, Glamorgan [129]; Roade, Northants [PP.22], DRUCE.

423/93. T. TENEBRICANS Dahlst., modif. Ouse meadows, Bucks and Northants, DRUCE.

425/1. Lactuca virosa L., var. integrifolia S. F. Gray. Portishead, Somerset, Miss Todd.

425/2. L. Serriola L., var. integrata Gren. & Godr. Cardiff, Glamorgan, October 1926, Druce and Smith.

†425/8. L. macrophylla A. Gray. Near Goathland, N. Yorkshire, Flintoff.

425/10. L. sativa L. Many seedling plants on waste ground near the Goods Depot of the G.W.R. near Bristol, W. Gloster, September 1927, Druce.

427/2. Sonchus arvensis L. Wretton Fen, W. Norfolk, 1927. A very large plant, up to 5 feet, with a largely fistular stem; leaves broad, up to 9 cm., not deeply cut, but only crenately or dentately undulate at the margins; achenes slightly compressed, narrowed at both ends, about 13 ribbed, the ribs very rough. I hope to see this plant again but did not keep a specimen. Little.

427/3. S. asper Hill, var. integrifolia Lej. Winchester, S. Hants; Odiham, N. Hants, Miss C. E. Palmer; Welwyn, Herts, typical, 1820, W. Blake; Wilsford, Wilts, 1917; Berkeley, W. Gloster; Marlborough, N. Wilts; Scousburgh, Zetland, 1924; Botley, Oxon; Hambledon, Bucks, 1915; St Neots, Hunts; Bangor, Carnarvon; Kenmare, Kerry; Shrawley, Worcester, Druce.

†428/1. Tragopogon porrifolius L. Christchurch, S. Hants, large examples, Druce.

430/1. Scorzonera humilis L. In some quantity but mostly over flower on June 20 at Ridge, Dorset (Sandwith's locality). I see not the slightest reason to doubt its indigenity, Druce.

†434/2. Phyteuma spicatum L. A plant in a shrubbery at Lanarth, Cornwall, P. D. Williams.

435/5. Campanula rotundifolia L., var. elongata Hampe. Crowell Hill, Oxon, October 1927, Sir M. Abbot-Anderson. This is a tall plant nearly 2 feet high with very narrow stem leaves, small flowers, and shorter calyx teeth, but it may be only a condition and not a true variation, Druce.

*†435/6. C. persicifolia L. Gidleigh, S. Devon, seven or eight plants on a hedgebank but some distance from houses, E. E. Jenner, v. sp. Quite naturalised in Shiplake Churchyard, Oxon, and by the Dee, Banchory, Kincardine, Druce; hedge near Sclerder between Looe and Polperro, now disappeared, Mrs Perrycoste.

445/1. Calluna vulgaris Hull, var. Erikae Graebn. Near Waterville, Co. Kerry, as the forma alba, Druce, the Marchioness of Lans-

DOWNE, and Lady K. LAMBTON. Var. SPECIOSA Dr. Near Newton Stewart, and New Galloway, Kirkcudbright, H. E. FOX; near Wareham, Dorset; Tighnabruaich, Argyll, DRUCE.

446/1. ERICA CINEREA L. Sunningdale, Berks, 1926, as a monstrous condition, probably induced by a mite, BIDDISCOMBE. Forma ROSEA. Near Falmouth, Cornwall, Dr J. HAUGHTON. He finds it keeps true in cultivation. The corollas are of a rose-pink colour. I have the same plant from Derrynane, Co. Kerry, and Aldermaston, Berks, DRUCE.

446/2. E. TETRALIX L., var. FISSA Dr. Studland, Parkstone, Dorset; Hinton Admiral, Christchurch, S. Hants, HALL.

†449/1. BORETTA CANTABRICA O.K. Between West Tiphouse and Glynn Valley, near G.W.R. line, THURSTON.

†451/2. LEDUM LATIFOLIUM Jacq. See *Journ. Bot.* 178, 1925, where it appears under the heading of *L. palustre*. It has now been definitely diagnosed as *latifolium*. Of course the *Ledum* is not a native of Britain, its home being North America.

*453/2. PYROLA MEDIA Sw. Near Prestatyn, Flint, a N.C.R., J. D. MASSEY and Miss ALLEN in *N.W. Nat.*, September 1927.

456/1. HYPOPITYS HYPOPITYS (L.), var. GLABRA (Roth) Dr. This plant was found in July 1927 growing somewhat sparingly in the damp slacks of sandhills near Kenfig Pool, Glamorgan, associated with *Salix repens*, *Equisetum palustre*, *Hydrocotyle vulgaris*, etc. The plant was first noticed in this locality about 18 years ago by Mr Hallett, F.E.S., but the information concerning its occurrence there was unfortunately discredited at the time owing to the fact that practically every botanical text-book states that it occurs only "in woods, at the foot of beeches and firs." "The British Flora," by Hooker & Arnott, adds "where the soil is dry." To these descriptions should surely be added "the damp hollows of sandhills," for it is now well known to occur in similar situations in several other localities both in Britain and on the Continent, in all cases, no doubt, when decaying vegetable matter is present. The plant is usually considered saprophytic. Careful investigation failed to detect that the mycorrhiza had any definite connection with, though it was interwoven round, the adjacent roots of *Salix repens* and *Equisetum palustre*. The flowers of *Hypopitys* omit a delicious honey-like scent, a fact which is not generally stated, E. VACHELL. Hawnby Bank, N. Yorks, FOGGITT; Glamorganshire, E. A. DAVIES, ex Prof. R. C. M'LEAN.

460/2. PRIMULA VULGARIS Huds., var. VIRIDIFLORA. Alkham, Kent, H. HOLLIDAY. On the Pollination ct. See E. M. MARSDEN JONES in *Journ. Linn. Soc.* 367, 1926.

478/1. CENTAURIUM CENTAURIUM (L.) Dr., var. CONFERTUM (vel SUBLITORALE), teste C. E. SALMON. Loch Ranza, Arran, Mrs WEDGWOOD.

478/2. C. VULGARE Rafn., var. LITTORALIS Turner. Ross Links, Northumberland, FOGGITT.

480/4. GENTIANA AMARELLA L. Attacked with the mite, *Eriophyes Kerneri* (teste E. W. SWANTON), Portland, Dorset, RAYNER; near Leicester, O. BEMROSE.

480/6. G. PRAECOX (Raf.). Downs above Dancing Ledge, Dorset, Dr H. SMITH; on downs near Wilton, S. Wilts, abundant, Miss CAMPBELL.

480/9. G. SUECICA Murb. Little Sand, W. Ross, 1926, DRUCE, teste LINDMAN.

†485/1. GILIA ACHILLAEFOLIA Benth. Burton-on-Trent, Staffs, DRUCE; Abingdon, Berks, GAMBIER-PARRY.

†493/2. LAPPULA LAPPULA (L.). (ECHINOSPERMUM.) Newport, Isle of Wight, LONG.

†496/5. BENTHAMIA (AMSINCKIA) MENZIESII (Lehm.). Campbeltown, Argyll, Miss M. BROWN; Little Cherwell, Wilts, GWATKIN; Abingdon, Berks, DRUCE.

†498/1. BORAGO ORIENTALIS L. Naturalised on Selborne Hanger, Hants, F. R. BROWNING *in litt.*

†500/4. ANCHUSA OCHROLEUCA M. Bieb. Hayle, Cornwall, Miss WALKER; probably this, THELLUNG.

506/1. MYOSOTIS PALUSTRIS Hill, var. STRIGULOSA (Reichb.). Near Wraxall, N. Somerset, Miss I. M. ROPER.

506/2. M. BREVIFOLIA C. E. S. Mickle Fell, alt. 1900 ft., and below Cronkley Fell, 1500 ft., N.W. Yorks, LOUSLEY.

†509/2. ECHIUM PLANTAGINEUM L. Avonmouth, W. Gloster, C. SANDWITH.

513/1. CONVOLVULUS ARVENSIS L., var. LINEARIFOLIUS Choisy. Brainridge, Hants, Miss TODD. This has long linear leaves with small auricles and smaller flowers and answers to the description in the *Flore de France*, but it may not be the true plant of Choisy, DRUCE. Mr J. F. Botteril has sent me from Aston Clinton a form in which in the centre of the pale pink corolla is a well defined star of reddish purple.

515/3. CUSCUTA EPITHYMUM Murr. On *Scabiosa Succisa*, Co. Clare, P. B. O'KELLY.

†515/7. C. suaveolens Ser. On *Polygonum aviculare*, Bristol, W. Gloster, C. Sandwith.

†517/2. Solanum nigrum L., var. luteo-virescens (Gmel.). Studland Heath, Dorset, Salmon and Hall.

†517/9. S. triflorum Nuttall. Bristol, W. Gloster, C. Sandwith.

517/15. S. Capsicastrum Lam. Splott, Glamorgan, Smith.

†518/7. Physalis peruviana L. Iver, Bucks, Melville.

527/8. Verbascum nigrum × Thapsus. Field near Redgrave Fen, Suffolk, H. L. Green.

†527/18. V. phoeniceum L. On a wall at edge of wood, Welbeck, Notts, Goulding.

†532/2. Linaria purpurea Mill. Corfe, Dorset, Hall.

†542/1. Erinus alpinus L. Heallan, Flint, Miss B. Allen.

543/3. Veronica officinalis L., var. integra Dr. Glen Fiagh, Angus, 1926, Druce.

543/4. V. Chamaedrys L., var. lamiifolia Beck. Stansteadbury, Herts, June 1927, Druce.

*543/12. V. humifusa Dicks. Cronkley pastures, N.W. Yorks, Lousley, not mentioned in Lees' "Flora of West Yorks" or "Top. Bot."

†543/22. V. (Hebe) longifolia L. Great Crosby, S. Lancs, Travis.

†543/31. V. peregrina L. Letterkenny, Donegal, Browning.

†544/1. Orthocarpus purpurascens Benth. Hythe Quay, Colchester [2382], Brown, det. Thellung.

(Mr D. Lumb has kindly determined the Euphrasias.)

545/1. Euphrasia stricta Host. Yetholm, Roxburgh, Miss I. M. Hayward, plants which might be referred here, of which it has the habitat, teste D. Lumb; Glen Docharty, Gairloch, W. Ross, Druce, plants nearer to *stricta* than to *nemorosa*; from Thirlmere, Cumberland; Wrotham, Kent, H. E. Fox.

545/2. E. borealis Wettst. Golf Links, Buncrana, Donegal, H. E. Fox; Pease Cottage, W. Sussex (mixed with *curta*, var. *glabrescens*), J. W. White; Port Henderson, Gairloch, W. Ross, Druce; Deerness, Orkney, 1884, Irvine Fortescue; Sedbergh, Yorks, Trapnell.

545/3. E. BREVIPILA Burn. & Gremli. Red Bridge, Miss I. M. HAYWARD: Kewstoke, N. Somerset [3232], 1907, E. S. MARSHALL, as *borealis*; Gruinard, Longa Isle, Big Sand, Gairloch, W. Ross: Kenfig, Glamorgan; Kenmare, Kerry; Banchory, Kincardine, DRUCE; Black Hall, Durham, H. E. Fox; Sedbergh, Yorks, TRAPNELL.

545/5. E. NEMOROSA Pers., var. CILIATA Drabble. Hills above Tibbie's, Selkirk, Miss I. M. HAYWARD: Mynach Valley, Cardigan, H. E. Fox; Penhallows Moor, Cornwall, VIGURS, as *brevipila*; Glen Docherty, Braemore, W. Ross, DRUCE; Sedbergh, Yorks, TRAPNELL; Thirlmere, Cumberland; Wrotham, Kent, H. E. Fox.

545/7. E. HIRTELLA Jord. Gyfarllwyd, Cardigan, at 1000 ft. in dry hilly pasture, July 30, 1918, H. E. Fox; Gairloch, W. Ross, New to Scotland, DRUCE.

545/10. E. OCCIDENTALIS Wettst. Derrynane, Kerry, DRUCE; Mochras, Llanbedr, Merioneth, J. H. SALTER.

545/11. E. SEPTENTRIONALIS Dr. & Lumb. Downreay, Caithness, 1885, H. E. Fox. Townsend in *B.E.C. Report*, referring to these plants, says, " It is an unusual form of *nemorosa*, teeth of leaves remarkably blunt." But this handsome plant does not recall *nemorosa*. I saw it there and at Farr, W. Sutherland. Lumb says of certain robust specimens that though there are " few glands on the stem, and in three instances there are much larger flowers than any previously seen," they are *septentrionalis*. He has also no hesitation in naming some plants gathered by Mr Barton in 1918 and 1919 from a sandy roadside, Cornwall, as *septentrionalis*.

545/14. E. ATROVIOLACEA Dr. & Lumb. Glen Fiagh, Angus, July 1926, new to the Mainland of Scotland, as it was hitherto for Orkney only, DRUCE; Merrow Down, Guildford, Surrey; Ballard Down, Studland, Dorset, H. E. Fox, with more prominent flowers than the Orkney plant.

545/15. E. MICRANTHA Fr. Gairloch, W. Ross; Strachan, Kincardine, DRUCE.

545/16. E. SCOTICA Wetts. Gyfarllwyd, Cardigan; Handa Isle, W. Sutherland, Loch Maree, Sands, W. Ross (*minima* looking plants), DRUCE; above Gwrydd, Plynlimmon, Cardigan, 2000 ft., J. H. SALTER.

545/19. E. ROSTKOVIANA Hayne. Little Frensham pond, Surrey, TRAPNELL; Banchory, Kincardine; Mellon Charles, W. Ross, DRUCE; Ballyvaughan, Co. Clare, 1927, O'KELLY; Gyfarllwyd, Cardigan; Ayrshire, H. E. Fox; very small plants, Lossiemouth, Elgin [2080], E. S. MARSHALL, as *brevipila*; Fisherbriggs, N. Aberdeen, FRASER.

545/21. E. Kerneri Wetts. In beautiful condition, flowering most freely, on the slopes of Crowell Hill, Oxon, both the large and small-flowered forms; Derrynane, Kerry; Stibbington, Hunts; on Brecon Beacon, Brecon, Druce; Faldon Side, Peebles, Miss I. M. Hayward; Crantown Chase, Dorset; Woody Bay, N. Devon, H. E. Fox; Ballyvaughan, Co. Clare, O'Kelly; Jedburgh, Roxburgh, Preb. Burdon; Sedbergh, York, Trapnell. Forma glandulosa D. Lumb. Limestone Down near Dovedale, Staffs, 1926, Druce.

*546 4. Bartsia viscosa L. Dog's Bay, Galway, C. D. Chase: Six Towns, Londonderry, Barnett and Stendall; near Edenbridge, W. Kent, found by Mr Meade Waldo, and identified by Mr Justice Talbot, a most interesting extension of its range.

549/3. Melampyrum pratense L. (Eupratense), var. alpestre (Brugg.) Beauv., var. scotianum Beauv. Altnaharra, W. Sutherland, 1919, Druce; Alnwick Moor, Northumberland, 1869, W. Richardson. Var. ericetorum D. Oliv. Bellsyde, Linlithgow, 1834; Loch Earn, St Fillans, Perthshire; Berriedale, Caithness, W. R. Linton; Hope Mountain, Flint, C. Wakefield; Aberglaslyn, Carnarvon, Miss C. E. Palmer and H. E. Fox. Var. montanum Johnst., f. debile. Watendlath, Cumberland, June 1920, Waterfall; Braemar, S. Aberdeen, Druce; Llanwrst, Carnarvon, 1887, Bailey; Abergynolwyn, Merioneth, H. E. Fox. Var. commutatum Tausch, caulis basi ramosis medio folio intercalaria (2-5 paria) gerens, sub-var. concolor Beauv. Upton Wood, Warwick, 1920; Silverdale, Lancs, Druce. Var. digitatum (Schm.), f. lanceolatum Spenn. Marchwood, New Forest, S. Hants, Piquet; Wellington College, Berks, as a robust form; Madeley, Staffs, Druce; Wrotham, Kent; Hardwick, Suffolk, 1869, H. E. Fox; New Forest, S. Hants, Druce; Farley, Surrey [2095], June 1919; Horsley, Surrey [2125], 1919, Britton; the latter "ad sub-var. *laurifolium* vergens;" Wakerly, Northants, Druce, "ad *britannicum* vergens." Sub-var. ovatum Spenn., 1826. Weston in Gordano, N. Somerset, 1920, Miss I. M. Roper; New Forest, S. Hants, Druce; Watton, Norfolk, Robinson, not very typical. Var. britannicum Beauv. Alton, Hants, Druce. Var. integerrimum Döll. Welwyn, Herts, Little and Sherrin; Frankland Wood, Durham, H. E. Fox, the latter "ad var. *hians* vergens;" probably the same from Mynach Falls, Cardigan, Druce. Var. hians Druce. Banchory, Kincardine, Druce, "ad *platyphyllum* vergens."

550/4. Orobanche major L. (elatior). Wimborne, Dorset; Dean Hill, Wilts, Hall.

550 6. O. reticulata Wallr., var. procera Dr. Specimen 22 in. high, inflorescence 9 in. long, Linton Common, York, A. Malins-Smith.

550/10. O. minor Sm. Growing on *Crepis capillaris*, Crewkerne, Somerset, H. Downes.

552/2. Utricularia major Schmid. Near Hurn, S. Hants, Hall.

†558/1. Mentha rotundifolia × spicata = M. cordifolia (Opiz) Fraser. Garden origin, Torquay, S. Devon, W. Herridge; Sholing, S. Hants, Rayner. Var. dourensis Fraser. Aberdour, N. Aberdeen, Fraser.

†558/2. M. Alopecuroides Hull. Gruinard, W. Ross, Druce; roadside near Llanfihangel, Brecon, Miss I. M. Roper; Elveden, W. Suffolk, Miss Cable.

558/3. M. longifolia Huds. × rotundifolia = villosa Huds. Portquin, Cornwall, 1910, H. E. Fox, as *Alopecuroides*; Yarnton, Oxon, Druce. × niliaca Jacq., var. nemorosa (Willd.). Newton Loan, Perth, Miss Young.

558/6. M. piperita L. Callander, W. Perth, Miss Young; Kenmare, Kerry; Boughrood, Radnor, Druce; Water of Fyvie, etc., N. Aberdeen, Fraser.

558/7. M. aquatica L. As a small form at Kenfig, Glamorgan; with a varying number of verticillasters, Wytham, Berks, Druce. Var. subglabra Baker. Aberthin, Glamorgan, 1926, Druce and Miss Vachell. Var. Ortmanniana H. Braun. Wytham, Berks, Druce. Var. minor Sole. Watcombe, St Mary Church, S. Devon, Miss Larter; Kenmare, Kerry, Druce; Holmwood, Surrey, Lousley. Var. major Sole (acuta Briq.). Cheltenham, W. Gloster; Walsall, Staffs, Druce; Coldharbour Village, Surrey, Lousley. × longifolia = M. paludosa Sole. Applecross, W. Ross, 1893, Druce, as *rubra*.

558/8. × M. hircina Hall, var. hirsuta Fraser. The Dour Burn, Aberdour, N. Aberdeen, Fraser.

558/9. × M. verticillata L. Wytham, Berks, Druce, as the Linnean type which is very rare. Var. ovalifolia H. Braun. Whitewell, Lydstep, Pembroke, Arnott; Boughrood, Radnor; Kenfig, Glamorgan; Wytham, Berks; Dour Burn, etc., N. Aberdeen, Fraser; Kenmare, Derrynane, Kerry; Sidmouth, Devon; Wood Perry, Oxon; Dovedale, Staffs and Derby, Druce; Wynde Park Lake, Hereford, Miss E. Armitage. Var. rivalis Briq. Berehaven, Co. Cork; Callander, M. Perth, Druce; Fingringhoe, N. Essex [2346], Brown.

558/10. × M. gentilis L. Tay side, Perth, Druce.

558/13. M. arvensis L., var. densifoliolata Briq. S. Tawton, Devon, Druce; Buncrana, Donegal, H. E. Fox. Var. cuneifolia Lej. & Court. Near this, Galashiels, Selkirk, Miss I. M. Hayward. Var. praecox Sole. Barrington Combe, N. Somerset, Miss Todd. Var. austriaca Briq. Berwick-on-Tweed, Northumberland, Druce.

558/14. M. Pulegium L. Gorley, S. Hants, **Hall**.

559/1. Lycopus europaeus L., var. glabrescens Schmideley. Ware, Herts, 1927, **Druce**.

561/5. Thymus pycnotrichus Ronn. Fishguard, Pembroke, **Druce**.

561/11. T. britannicus Ronn. Glen, Peebles; Derrynane, Co. Kerry, **Druce**.

*†562/1. Satureia hortensis L. Splott, Glamorgan, **Smith**.

562/5. S. adscendens Jord. A small-leaved form, near Barnstable, Devon, Countess **Fortescue**.

562/8. S. Acinos Scheele. Banchory, Kincardine, **Druce**.

†565/1. Melissa officinalis L. Strachan, Kincardine; Kenmare, Kerry, **Druce**.

*†570/3. Dracocephalum parviflorum Nutt. Splott, Glamorgan, **Smith**.

573/1. Prunella vulgaris L., var. nemoralis Bég. Woody Bay, N. Devon, H. E. Fox; St Brelade's, Jersey, **Piquet**; growing with the type, Shrawley Wood, Worcester; Crabtree, Winchester, Hants, **Druce**; Edinburgh, 1848, **Skene**.

573/2. P. laciniata L. In a pasture, with *P. vulgaris*, Great Wymondley, Herts, 1927, new to this district though recorded by C. E. Moss for Royston, **Little**.

577/1. Stachys alpina L. Found in July last (1927) in some quantity a few miles from Cerrig-y-Druidion, Denbighshire. It was growing in three or more places on the edge of a wooded bank, in partial shade, on limestone. Its associates were *Agrimonia odorata*, *Origanum vulgare*, *Stachys sylvatica*, and *Urtica dioica*. The locality is away from houses, and there does not seem any reason to doubt that the plant is indigenous, A. **Wilson**.

†577/9. S. salviifolius Ten. Walton, S. Lancs, **Travis**, teste **Thellung**.

†577/10. S. lanata Jacq. St Aubin's, Jersey, **Druce**.

579/1. Leonurus Cardiaca L. By the Medway, Stoke, Kent, Miss **Stevens**.

581/4. Lamium hybridum Vill. Growing with *purpureum* and *amplexicaule* at Kenfig, Glamorgan, Miss **Vachell**; White Hall Farm, Littlefoot, Cambridge, 1927, in a crop of sugar-beet, **Little**.

*581/10. L. Galeobdolon Cr. Near Kilcarry Bridge, Co. Carlow, A. W. Stelfox in *Ir. Nat.* 203, 1927.

583/1. Ballota nigra L., var. mollissima Druce. Very typical near Kenfig, Glamorgan, June and August 1927, probably a sub-species, Druce. Var. alba. Walsall, Staffs, Druce and Sir Roger Curtis.

588/3. Plantago Coronopus L., lusus foliacea. Spikes almost replaced by leafy bracts, Perranporth, Cornwall, Tresidder.

588/8. P. lanceolata L., var. altissima (L.). A form with compound head, Swanage, Dorset, Miss Todd, det. Thellung. A proliferous form at Cummertrees, Dumfries, Miss R. Bright.

588/10. P. major L., var. vel lusus rosea (Ger.). Near Ballyvaughan, Co. Clare, O'Kelly. This monstrosity is figured in Gerard's *Herbal* 420, 1633, as *Plantago rosea spicata.*

†594/1. Corrigiola littoralis L. Barry, Glamorgan, Smith, Melville and Druce. A curious adventive.

(The Amaranths have been identified by Dr Thellung.)

†596/1. Amaranthus caudatus L. Iver, Bucks, Melville.

†596/2.* A. hybridus L., sens. lat., probably A. Quitensis H.B.K. Splott, Glamorgan, 1926, Druce and Smith.

†596/4. A. chlorostachys Willd. Itchin Abbas, Hants, C. Sandwith. Var. aristulatus Thell. Dagenham, Essex, Melville.

†596/6. A. retroflexus L. Very abundant at Ware, Herts, Druce; Wool, Dorset, Hall. Var. Delilei Thell. Splott, Glamorgan [2611], Melville.

†596/11. A. sylvestris Desf. Dagenham, Essex, Melville, det. Kew.

†596/11. A. angustifolius L., var. polygonoides (Moq.) Thell., forma intermedius Thell. Barry, Glamorgan, Druce.

(The Chenopods have been kindly named by Dr Murr.)

600/3. Chenopodium Bonus-Henricus L. Kirkstone Pass, Westmorland, 1480 ft., Webb.

600/4. C. hybridum L. Brambridge, Hants, Miss Todd; Wilton, Wilts, Miss Campbell.

600/7. C. opulifolium Schrad., var. microphyllum Murr. Didcot, Berks; [Funchal, Madeira, 1909], Druce.

600/8. C. ALBUM L., var. (sub-sp.) PAUCIDENS Murr. Abingdon, Berks, DRUCE. Var. (sub-sp.) LANCEOLATIFORME Murr. Abingdon, Berks; Burton-on-Trent, Staffs; Ware, Herts, DRUCE. Var. (sub-sp.) SUBFICIFOLIUM Murr. Bristol city tip, W. Gloster, Miss TODD; Cardiff, Glamorgan, DRUCE. Var. VIRIDESCENS St Am. Waterville, Co. Kerry, DRUCE; Leicester, BEMROSE. f. PAUCIDENTATA Murr. Didcot, Berks, DRUCE. Var. PEDUNCULARE Bert. Bristol city tip [26], W. Gloster, Miss TODD; Ware, Herts, DRUCE. [Var. PSUEDO-BORBASII Murr. Funchal, Madeira, 1909, DRUCE]. ×OPULIFOLIUM – C. PREISMANNI Murr. Barry, Glamorgan, DRUCE, SMITH and MELVILLE. × STRIATUM = C. SUBSTRIATUM Murr. Near the G.W.R. Goods Depot, Bristol, W. Gloster, DRUCE.

†600/11. C. LEPTOPHYLLUM Nutt. Hitchin, Herts, Miss CABLE.

600/13. C. GLAUCUM L., var. MICROPHYLLUM Murr. Syston Common, Mangold field, W. Gloster, C. SANDWITH. To this rather than to *ambiguum* R. Br. Murr refers Mrs Sandwith's specimen from St Anne's, Bristol.

600/14. C. VULVARIA L., f. RHOMBOIDALE Murr. Southwold, Suffolk, 1890, Miss C. E. PALMER.

600/15. C. POLYSPERMUM L., var. SPICATUM Moq., and var. CYMOSUM Moq. Growing together, with intermediates, White Hall Farm, Littlefoot, Cambs, 1927, LITTLE.

†600/36. C. CAPITATUM Asch. Dry Sandford, Berks, GAMBIER-PARRY; Newtimber, Sussex, Lady ALETHEA BUXTON.

606/3. ATRIPLEX PATULA L., var. BRACTEATA Westerl. Coast, Newcastle, Co. Down, Col. SANDERSON; Ware, Herts; Burton-on-Trent, Staffs; Bristol, W. Gloster, DRUCE.

606/6. A. DELTOIDEA Bab. Ware, Herts; Didcot, Berks, DRUCE.

†606/11. A. TATARICA L. Studland, Dorset, Miss TODD.

†607/1. AXYRIS AMARANTOIDES L. Par, Cornwall, MEDLIN; waste ground, Queen Street, Hitchin, Herts, LITTLE, det. WILMOTT.

611/5. SALICORNIA RAMOSISSIMA Woods. Flats below Hengistbury Head, S. Hants, LOUSLEY and HALL, det SALISBURY.

611/7. S. PROSTRATA Pallas. Mylor Creek, Falmouth, Cornwall, TRESIDDER, det. SALISBURY.

615/11. POLYGONUM MINUS Huds. Wareham, Dorset, HALL.

†615/19. P. patulum M. Bieb. Ware, Herts, Druce and Miss Trower.

†615/28. P. amplexicaule Don. Bridge End, Ramelton, Donegal, Browning. Var. oxyphyllum Don. Fort Stewart, Donegal, Browning.

†615/31. P. polystachyum Wall. Mardley Heath, Herts, H. Philips and Miss Cable.

†615/32. P. cuspidatum S. & Z. Waste ground, Diss, Norfolk, H. L. Green.

†615/33. P. sachalinense Schmidt. Dagenham, Essex, Druce and Melville.

†616/2. Fagopyrum tataricum Gaertn. Colwick, Notts, H. H. Mather.

618/1. ×Rumex Weberi Fisch.-Benz. (Hydrolapathum × obtusifolius). Shefford, Berks; Culeaze, Dorset; Wilsford, Wilts, Druce.

618/12. R. palustris Sm. Peat moor near Glastonbury, N. Somerset, Col. G. Watts. *R. limosus* Thuill. is a hybrid of *maritimus* and *conglomeratus*, and thus differs from *palustris*, which is a true species.

618/13. R. maritimus L. 1. Typical. White Hall Farm, Littleport, Cambs, 1927, Little. 2. Dwarf form, the whole plant only 2 in. high, Ringmere, S. Norfolk, 1926, E. F. D. Bloom, ex Little. Ascherson & Graebner (*Fl. des N.O. deutschen Flachlandes*, 267) give a form "*humilis* Peterm. Fl. Lips. 267 (1838). Zwergform Setten." But as they place it after *R. palustris*, which they make the hybrid *R. conglomerato-maritimus*, it is doubtful whether a dwarf plant of *R. maritimus* or of *R. palustris* Sm. is intended, Little. Type also from Swansea foreshore, Glamorgan, Webb.

†618/17. R. scutatus L. In the grounds at Godolphin House, Cornwall, J. W. Hartley.

†618/19. R. salicifolius Weinn. Newport, Isle of Wight, Long.

†618/20. R. Patientia L. In great plenty and forming a conspicuous feature at Dagenham, Essex, shown to me by R. Melville, Druce.

†618/21. R. Bucephalophorus L. Newport, Isle of Wight, Long; Barry, Glamorgan, Druce and Smith.

†618/29. R. obovatus Danser. Lambridge, Oxon, Mrs Wedgwood. This came from the street refuse of Henley.

628/9. Euphorbia virgata W. & K. Newhaven, Sussex, Miss Pickard.

628/11. E. Cyparissias L. Welbeck, Notts, Goulding.

628/11. × E. virgata? Hulme, Northumberland. This is from Syme's locality for *pseudo-Cyparissias* Jord., which is a doubtful British plant, Druce, det. Thellung.

631/1. Buxus sempervirens L. In great quantity. Wexcombe, Wilts, Druce and Mrs Baring.

632/1. Mercurialis perennis L., var. ovata Mitten, ? of Stendal. Ingleborough, Yorks, Miss Todd.

*†632/2. M. annua L. Burton-on-Trent, Staffs, Druce.

633/6. Ulmus minor Mill. (stricta Lindl.), var. sarniensis Loud. Near Ware, Herts, Druce.

†636/1. Ficus Carica L. On the cliffs at Mumbles, Glamorgan, far out of reach, Webb.

637/1. Urtica dioica L., var. angustifolia W. & G. Eastleigh, S. Hants, Miss Todd, a form with exceptionally large teeth.

637/2. U. urens L., var. parviflora Wedd. Marston brickyards, Oxon, August 1927, perhaps adventive, Druce.

†639/1. Helxine Soleirolii Req. By a stream side running down a cliff about 3 miles east of Sidmouth, S. Devon, no house within a mile, F. A. Sowter; found by Pere Burdo on old walls in St Peter's Valley, Jersey, ex Attenborough.

†643/2. Alnus incana Willd. Ellercow, Winskill, Cumberland, H. Britten in *N.W. Nat.* 100, 1927.

†646/3. Quercus Cerris L. Near Ware, Herts, Druce.

650/1. Salix pentandra L. Nant Glyn, Denbigh, Webb; Verwood, Dorset, J. H. Salter.

650/2. S. fragilis L., var. decipiens (Hoffm.). Den of Aberdour, N. Aberdeen, Fraser. × triandra Alopecurioides. Den of Aberdour, N. Aberdeen, Fraser.

650/3. S. alba L. A large number of seedlings, 1-2 years old, growing upon mud and peat dredged from the bed of the River Wissey, near Stoke Ferry, W. Norfolk, 1927, Little. Var. vitellina. Den of Aberdour, N. Aberdeen, Fraser.

650/4. S. triandra L. St Neots, Beds, as *speciosa* Host? but Mr Fraser gives it the above name. Specimens of this, *viminalis*, *triandra* and *fragilis* were seeding in thousands on mud, dredged from the River Lea at Hertford in October last, DRUCE.

650/5. S. PURPUREA L. At Wretton Fen, and near Denver Station, W. Norfolk, 1927. There is a good deal of this with narrow and small leaves, small enough leaves, I think, for Smith's type, but the bushes are erect, instead of drooping in habit, LITTLE. Var. LAMBERTIANA (Sm.). Den of Aberdour, N. Aberdeen; Loch of Skene, S. Aberdeen, FRASER.

650/6. ×S. ACUMINATA Sm. Wallington Hall and Wretton Fen, W. Norfolk, 1927, LITTLE; Old Pitsligo, N. Aberdeen, FRASER.

650/8. S. CAPREA × VIMINALIS = S. MOLLISSIMA (Sm.). Red Hill, Northants, DRUCE; Water of Fyvie, N. Aberdeen, FRASER.

650/9. S. AURITA × CINEREA = S. LUTESCENS Kern. Red Hill, Northants, July 1927, DRUCE; Skene, S. Aberdeen, FRASER.

650/9. S. AURITA × VIMINALIS. Den of Aberdour, N. Aberdeen, FRASER.

650/10 S. CINEREA × VIMINALIS = S. FERRUGINEA (G. And.). Shillingford, Berks, DRUCE.

650/11. S. REPENS L., var. INCUBACEA (L.). Roseheath, N. Aberdeen. Sub-form. SERICEA Fraser with above and with var. ARGENTEA (Sm.) FRASER.

660/1. LIPARIS LOESELII Rich., var. OVATA Riddels. Sandhills east of Port Talbot, Glamorgan. Over 100 plants were seen by Miss Insole and myself in July 1927. They were in excellent condition and were fruiting well. The discovery of this plant in a place far removed from the only other locality in which it is known to occur in the county is of considerable interest, E. VACHELL. Conducted by Miss David and Miss Vachell, I saw it *in situ* last August and counted about a hundred specimens. It was then of course in fruit. The plants bore from two to three seed-bearing capsules, DRUCE.

663/2. LISTERA CORDATA Br. Near Carberry, Midlothian, Lady ELPHINSTONE.

667/3. CEPHALANTHERA LONGIFOLIA Fritsch. Yowlas Valley, N. Yorks, FOGGITT.

668/1. HELLEBORINE PALUSTRIS Schrank (floribis albis). The white-flowered form occurs in considerable abundance near Kenfig Pool, Glamorgan, with hundreds, if not thousands, of normally-coloured flowers. The white flowers show a tendency to become slightly larger than the others and the crenations on the labellum rather more defined.

My attention was drawn to both forms during the summer of 1927 by the number of flies and aphides which they had entrapped by means of the sticky fluid secreted in the cavity of the labellum. The bodies of the dead flies (a species of *Limnophora*) blocked up the entrance to the nectary thus preventing cross-pollination, while the aphides, once entangled, were seen to remain for many hours imprisoned, finding it practically impossible to free their legs. By far the greater proportion when first observed were dead. I sent specimens of the aphis to Mr H. Hallet, F.E.S., who submitted them to the best authorities. Mr Laing stated that he and Professor Theobald had decided that the aphid was new, and that a description of it should, all being well, be included in the appendix of Professor Theobald's "Monograph of the British Aphidae" as *Aphis epipactisi*. One analogous case can be quoted—a botanist while searching in 1926 for *Orchis elodes* in a Surrey bog found that "nearly every blossom had a little fly in the top of the spur but when the flies were removed they were dead or else intoxicated with nectar." E. Vachell.

669/4. O. ustulata L. Meadows near Thirsk, Yorks, Foggitt.

669/7. O. incarnata L. Type, Southwick, Northants; Culeaze, Dorset, Druce. Var. pulchriora Dr. Southwick, Northants, Druce. Var. dunensis Dr. Plentiful at Kenfig, Glamorgan; Birkdale, S. Lancs, very beautiful, gathered with Hon. Mrs Adeane and Hon. Mrs Guy Baring on Eclipse Day, 1927, Druce. ×praetermissa. Culeaze, Dorset, rare, Druce.

669/8. O. praetermissa Dr. Essex, Lady Rayleigh; Wareham and Ridge, Dorset; also as very slender and as very robust forms, Culeaze, Dorset; Derrynane, Co. Kerry, Druce; Oughton Head, Norfolk, Miss Cable; Corfe, Dorset, Hall; Ham Ponds, Kent, H. Walker.

669/10. O. maculata L. The true plant in varying shades of colour, and hybridising with *praetermissa* at Culeaze, Dorset, June 1927, Druce; Linn Gill, Yorks, Miss Todd; Kenfig, Glamorgan; Kenmare, Kerry, Druce. Var. candidissima (Weber) Dr. (leucantha). Very small specimens, Corfe, Dorset, Druce; Moors, Linarfad, Yorks, Miss Todd. ×praetermissa = O. Hallii Dr. Culeaze, Dorset, Druce and Major Guthrie Watson. ×purpurella. Widdycombe Fell, Durham, Druce.

669/11. O. Fuchsii Dr. Cowleaze, Dorset, Druce. ×maculata = transiens Dr. Culeaze, Dorset, Druce. ×praetermissa O. Mortonii Dr. Culeaze, Dorset; Southwick, Northants, Druce.

669/17. O. pyramidalis L. Derrynane, Kerry, on sea sand, and of a darker colour (purple-red rather than rose-red) than our English form, August 1927, Druce.

669/18. O. HIRCINA Cr. Offham, Lewes, Sussex, ex Miss COTTES.

672/3. OPHRYS APIFERA Huds., var. Near Westbury, Wilts, E. JENKINSON.

672/4. O. TROLLII Heg. & Heer. Hardwicke, E. Gloster, J. W. HAINES.

672/5. O. MUSCIFERA × SPHEGODES (with O. MUSCIFERA). Wye Down, Kent, Miss R. BRIGHT.

674/4. HABENARIA VIRIDIS Br., var. VAILLANTII (Ten.) Fernald. On Ivinghoe Beacon, Bucks, abundant, with the type, 1927, DRUCE; Avingdon and Winchester, Hants, 1910, Canon VAUGHAN.

†677/1. HERMODACTYLUS TUBEROSUS (L.). On the edge of a sandhill, near the lifeboat house, Woolacombe, N. Devon, 1927, ex W. D. MILLER.

†680/1. SISYRINCHIUM ANGUSTIFOLIUM Mill. Near Water Eaton Manor, Oxon, FILSELL; Ainsdale dunes, S. Lancs, F. W. HOLDER.

†681/2. GLADIOLUS COMMUNIS L. Alien. A single specimen in the herbage alongside the road, Strensall Common, Yorks, no house within half-a-mile, A. WENTWORTH PING.

†683/1. TRITONIA CROCOSMIFLORA Nich. Derrynane, Co. Kerry; on a rubbish heap at Christchurch, S. Hants, DRUCE.

†684/3. NARCISSUS BIFLORUS Curt. In great plenty in a pasture field near Kenfig, Glamorgan, shown to the Botanical Excursion members in June 1927, Miss VACHELL.

†686/1. LEUCOJUM VERNUM L. Meadow, East Dereham, Norfolk, EDWARD ANDERSON.

700/1. PUBILARIA PLANIFOLIA Melv. Fruiting fairly freely, Derrynane, Co. Kerry, August 1927, DRUCE.

*702/4. ALLIUM VINEALE L. Mull of Galloway, Wigton, see *Trans. Bot. Soc. Edin.* 337, 1927.

706/3. SCILLA NONSCRIPTA (L.) H. & L., var. BRACTEATA Dr. Wood at Aldbourne, Wilts, Miss TODD. Forma STUARTIAE Dr. Rock Hill, Worcester, increasing in its original locality and sent by its discoverer on May 2, 1927. See *Rep. B.E.C.* 49, 1920.

707/2. ORNITHOGALUM UMBELLATUM L. Fields at Redenham, Hants, in very great quantity, Hon. Mrs G. BARING and Mrs HILL DILLON.

†707/3. O. nutans L. Forge Wood near Worth, Kent, Wallace and Lousley.

†709/2. Fritillaria pyrenaica L. In a lane near Stock Gaylard, Dorset, 1924, E. F. Hall, as *Meleagris*.

718/4. ×Juncus diffusus Hoppe. Culeaze, Dorset, Druce; East Lulworth, Dorset, Hall.

†718/16. J. tenuis Willd. Cwm Bycham, Brecon, 1927, Gilmour; *Avonmouth Dock, W. Gloster, Miss I. M. Roper; Broadheath, Cheshire, H. de W. Marriott in *N.W. Nat.* 29, 1927.

†720/1. Phoenix dactylifera L. Christchurch, S. Hants; Burton-on-Trent, Staffs; near Bristol, W. Gloster, etc., Druce.

†726/1. Calla palustris L. In Aydon Dene, above the village of Corbridge, S. Northumberland, 1927, ex O. Bemrose.

732/1. Sagittaria sagittifolia L. Canal, Briton Ferry. The third locality in Glamorgan, Webb.

*739/1. Zannichellia repens Boenn. Canal at Muckley Corner, Staffs, Druce and Sir Roger Curtis.

†746/10. Scirpus Holoschoenus L. Avonmouth, W. Gloster, C. Sandwith.

753/4. Carex vesicaria L. Mynydd y Glu, Glamorgan, Druce and Miss Vachell.

753/7. ×C. Pannewitziana Figg. = C. inflata × vesicaria. Mynydd y Glu, Glamorgan, Druce and Miss Vachell.

753/12. C. strigosa Huds. Near Nelson, Lancs, A. Turner.

753/13. C. helodes Link. Cwm Bycham, Brecon, Gilmour; near Stockport, Lancs, Canon H. H. Claye; near Nelson, Lancs, A. Turner; near Petersfield, Hants, Browning.

753/19. C. fulva Good. Glandyfi, Cardigan, Mrs Debenham; near Nelson, Lancs, A. Turner.

753/21. C. lepidocarpa Tausch. Derrynane, Co. Kerry; Brecon Beacon, Brecon, Druce.

753/23. C. extensa Good. Penrice, Glamorgan, Druce and Miss Vachell.

753/34. C. pallescens L., var. undulata Kunze. Near Nelson, S. Lancs, A. Turner; Budleigh Salterton, Devon, Major Orme.

753/45. C. elata All. A rather slender form at Southwick Bog, Northants. Rare and confined to the east of the county, Druce.

753/51. C. concolor R. Br. (C. rigida Good.). Mickle Fell, N.W Yorks, Lousley.

753/57. C. remota × vulpina = C. axillaris Jord. Near Magpie Green, Northam, Suffolk, H. L. Green.

753/58. C. canescens L. Typical at Mynydd y Glu, Glamorgan, Druce; near Nelson, S. Lancs, A. Turner. Var. fallax Kurtz. Cautley Crag, N.W. Yorks, Trapnell. The finder says it is much later in flowering than the true *canescens* which grows 8 miles away but at an altitude only slightly lower. I do not remember seeing it from England before. Var. robustior Blytt. Between Mickle and Cronkley Fell, N.W. Yorks, Lousley.

753/61. C. Pairaei Schultz. Lizard, Cornwall, H. T. Devis.

†754/5. Panicum laevifolium Hack. Coup near Airdrie, Lanark, Grierson, det. Thellung.

†754/8. P. Crus-galli L., var. longiaristatum Lej. Dagenham, Essex, Melville.

†754/10. P. sanguinale L. Fine examples on waste ground, Didcot, Berks, Druce.

†756/2. Setaria viridis Beauv., var. Weinmanni (R. & S.). Iver, Bucks, Melville.

†763/2. Sorghum halepense Pers. Avonmouth Docks, W. Gloster, H. J. Gibbons; Didcot, Berks, Druce.

†765/3. Phalaris aquatica L. (caerulescens Desf.). Bristol, W. Gloster, C. Sandwith.

†765/6. P. brachystachys Link. Hackney, Middlesex, Melville, teste Kew.

*†765/8. P. angusta Nees. Bristol, W. Gloster, C. Sandwith; Splott, Glamorgan, Smith.

766/1. Anthoxanthum odoratum L. A kneed form was found at Marlborough by Mrs Wedgwood, but it is not *Foucaudii*, which is a Corsican plant with large panicles and leaves 5-7 mm. broad, Druce. Forma vel var. interruptum Dr. Hull Docks, S.E. Yorks, Waterfall.

†766/2. A. aristatum Boiss. (A. Puelli Lec. & Lam.). Ballast, Barry, Glamorgan, Miss E. Vachell.

770/1. Alopecurus pratensis L., var. caesius Schwarz. Marlborough, Wilts, Mrs Wedgwood.

†773/1. Piptatherum multiflorum Beauv. Bristol, Avonmouth, W. Gloster, C. Sandwith.

777/1. Phleum pratense L., var. longiaristatum Parn. Didcot, Berks, Druce; Welwyn, Herts, W. Blake.

†777/7. P. Michelii All. Bristol, W. Gloster, C. Sandwith.

†777/8. P. subulatum A. & G. (P. tenue Schrad.). Bristol, W. Gloster, C. Sandwith.

†780/1. Agrostis verticillata Vill. Kingsbridge, Devon, C. Sandwith.

780/2. A. alba L., var. major Gaud. Glasgow, Lanark, Grierson; Ware, Herts, Druce.

780/3. A. capillaris L., var. pumila (L.). Sherford Bridge, Dorset, Hall.

†788/1. Lagurus ovatus L. Blackpill, Glamorgan, Webb.

794/1. Avena fatua L., var. pilosa Syme. Didcot, Berks, Druce. Var. glabrata (Peterm.). Burton-on-Trent, Staffs, Druce, det. Marquand. Var. intermedia. Didcot, Berks, Druce.

†794/5. A. Ludoviciana Dur. Abingdon, Didcot, Berks, Druce, det. Thellung; Barry, Glamorgan, Druce.

795/2. Arrhenatherum tuberosum (Gilib.) Dr. Banchory, Kincardine; Ballater, S. Aberdeen; Kenfig, Glamorgan; Kenmare, Co. Kerry; Berehaven, Co. Cork; Culeaze, Dorset, Druce; Leghourne, N. Lincoln, Mrs H. Borrill, ex Rev. W. W. Mason.

†805/1. Lamarckia aurea Moench. Splott, Glamorgan, Smith.

†808/1. Cynosurus echinatus L. Ditchling Common, Sussex, Miss Cottes; near Walsall, Staffs, Druce and Sir Roger Curtis; gravel-pit, Worms Heath, Surrey, Lousley.

813/1. Molinia caerulea Moench, var. breviramosa Parnell. Dersingham, W. Norfolk, Fryer; Simonswood, S. Lancs, Wheldon; Newtownards, Co. Down, Fox; Gairloch, W. Ross; Derrynane, Co. Kerry; Berehaven, Co. Cork, Druce.

819/1. Dactylis glomerata L., var. pendula Dum. A slender form with distant panicle branches the lower of which are pendulous.

Chipstead, Surrey, Druce. An extraordinary robust form has been found by the Rev. W. Wright Mason at Melmerby, Cumberland.

†821/1. Schlerochloa dura Beauv. Hull Docks, S.E. Yorks. Waterfall.

822/2. Briza minor L. Parkstone, Dorset, Hall.

†822/3. B. maxima L. Iver, Bucks, Melville.

826/4. Festuca elatior L., forma ramosa. Airdrie Coups, Lanark, Grierson.

826/6. F. heterophylla Lam. Selkirk, Druce and Miss I. M. Hayward.

826/7. F. rubra L., var. commutata Gaud. = fallax Thuill. Penrice, Glamorgan, Druce; Stapleton, W. Gloster [23], Miss Todd. Var. megastachya Gaud. Marlborough, Wilts, Mrs Wedgwood, det. Howarth, as *grandiflora*. Var. pruinosa Hack. Nash Point, Glamorgan, Druce.

826/9. F. ovina L., var. paludosa Gaud., tending towards vulgaris. Mynydd y Glu, Glamorgan [PP.103], Druce. Var. firmula (Hack.). Frilford, Berks [PP.100], Druce. Var. vivipara. Windermere Wood, N. Lancs [20], Miss Todd.

†826/16. F. Danthonii A. & G. In plenty at Burton-on-Trent, Staffs, Druce.

826/18. F. Myurus L. Wivenhoe, Essex [2368], Brown; Bwlch, Brecon, C. Marks.

†827/8. Bromus rubens L. Hull, S.E. Yorks, Waterfall.

†827/19. B. leptostachys Pers. Colchester, Essex [2369], Brown; Mendip, N. Somerset, Druce.

†827/22. B. arvenis L. Blackpill, Glamorgan, C. Marks.

†828/3. Brachypodium distachyum Beauv. Hull Docks, S.E. Yorks, Waterfall.

†829/2. L. temulentum L. Dagenham, Essex, Druce; ? Cardowater Coup, Lanark, Grierson. A decreasing alien.

†829/4. L. multiflorum Lam. Luxuriant examples at Burnham-on-Sea, N. Somerset, Miller, det. Thellung.

830/1. Agropyron junceum Beauv., var. macrostachyum Dr. Par Sands, Cornwall, Medlin.

830/4. A. repens L., var. caesium Beck. Hanwell, Middlesex; St Luke's, Jersey; Milverton, Warwick, Druce.

†832/11. Triticum cylindricum C. P. & G. Par Harbour, Cornwall, Medlin.

833/1. Lepturus filiformis Trin. Towyn, Merioneth, Mrs Debenham.

†836/6. Elymus canadensis L. Coatbridge Coups, Lanark, Grierson.

†836/7. E. virginicus L. Dagenham, Essex, Melville.

844/2. Equisetum arvense L., var. alpestre Wahlb. Kepplecore Tarn, Helvellyn, Cumberland, J. W. Haines.

*844/3. E. sylvaticum L. May Hill, W. Gloster, J. W. Haines.

844/7. E. hyemale L. By the railway near Cardiff, Glamorgan, June 1927, Bot. Soc. Excursion.

*853/2. Athyrium alpestre Milde. Glenveagh, Donegal, Browning.

†871/2. Selaginella Kraussiana Braun. Porthpean, E. Cornwall, Tresidder.

876/5. Chara hispida L. Ainsdale beach, S. Lancs, Travis.

PLANTS OF DONEGAL, 1926-1927.

By F. R. Browning, B.Sc.

8/1. Trollius europaeus L. Loch Fern on east shore among boulders. (No *Lobelia Dortmanna* seen.)

32/1. Fumaria capreolata L. Cultivated ground, Imlick, Carrigans.

88/34. Viola Curtisii Forst. Rosa penna.

100/6. Cerastium viscosum L. A very hairy form at bottom of wall, Knockpamonagh.

102/10. Arenaria verna L. Close dune turf, Port Salon.

103/1. Sagina nodosa Fenzl. Rathmullan strand, etc.

116/1. Lavatera arborea L. Whale Head, Loch Swilly.

199/23. Saxifraga stellaris L. Ledges, Derryveagh Mountains, Poisoned Glen. Although recorded as frequent, I found it rare.

199/24. S. umbrosa L. Muckish Summit, 2197 ft., Glenveagh.

211/22. Sedum roseum Scop. High rocky and mossy damp ledges, Derryveagh Mountains.

213/1. Drosera anglica Huds. Loch side, Glenveagh, in one spot only, S.W. of Castle.

214/1. Hippuris vulgaris L. Mainland opposite Aughinish Island.

239/2. Eryngium maritinum L. Dunree shore.

244/1. Smyrnium Olusatrum L. Walls of Donegal Castle.

250/3. Carum Petroselinum B. & H. Walls of Donegal Castle.

257/1. Myrrhis Odorata Scop. Old churchyard, Ramelton.

271/1. Ligusticum scoticum L. Dunes, Douring Bay. ? Rosa penna.

326/1. Antennaria dioica Gaertn. Marble Hill.

328/3. Gnaphalium sylvaticum L. Glen Car and Cottian Wood.

405/7. Centaurea nigra L. White-flowered, Glen Kerrykeel.

416/2. Crepis paludosa Moench. Glenveagh.

431/1. Lobelia Dortmanna L. Glenveagh, Loch Keel.

438/3. Vaccinium Vitis-idaea L. Knockalla Mountain, Garten Lake, the largest of the Black Lakes.

453/2. Pyrola media Sw. Cornamilu, Loch Keel.

501/1. Lycopsis arvensis L. Dunree, fields beside shore.

547/1. Pedicularis palustris L. White-flowered, Lake Akibbon.

552/3. Utricularia intermedia Hayn. Peat dykes, Glenveagh.

552/5. U. minor L. Peaty Loch, Fern.

553/4. Pinguicula lusitanica L. Coravady Burn, by Doon Well.

558/7. Mentha piperita L. Glenveagh.

558/9. M. verticillata Huds. Bridgend Mill, Ramelton.

589/1. Littorella uniflora Asch. Loch Fern.

628/1. Euphorbia hyberna L. One or two big bushy plants up the River Dunree.

650/3. Salix alba L., var. vitellina (L.). Burnside, Knocknamonagh; Knockabryan, lower slopes.

722/3. Sparganium simplex Huds. Mainland opposite Aughinish Island.

730/1. Echinodorus Ranunculoides Engel. "The Loch" between Portnablas and Marble Hill.

746/15. Scirpus rufus Schrad. Immense colonies on tidal mud flats, Bught, Ramelton.

750/1. Cladium Mariscus Br. "The Loch" between Portnablas and Marble Hill.

851/1. Asplenium marinum L. Rocky cliffs, Rosa penna.

853/2. Athyrium alpestre Midle. Glenveagh.

856/4. Dryopteris spinulosa O. K. Shady wood, Imlick, Dunmore, Carrigans.

856/5. D. aemula O. K. Glenveagh.

856/9. D. Phegopteris (L.). Colonies in great boulder cavern, Poisoned Glen, Derry Veagh Mountains.

857/4. Cystopteris fragilis Bernh. Dunmore, Carrigans.

859/1. Ceterach Ceterach (L.). Bught Bridge, Ramelton.

864/1. Osmundo regalis L. Glenveagh.

870/7. Lycopodium Selago L. Summit of Muckish, 2197 ft., Poisoned Glen.

The aliens include:—

40/1. Lunaria rediviva L. Letterkenny.

132/3. Oxalis stricta L. Imlick, Carrigans, etc.

133/4. Impatiens glandulifera Royle. Sprackburn, Letterkenny.

185/156. Rubus spectabilis Pursh. Woods, Lessennan, near Letterkenny.

189/26. Potentilla vilmorinciana Korn. Well established in open copses, Glen Car, Letterkenny.

292/1. Leycesteria formosa Wallich. Copses behind Rathmullen strand.

383/1. Senecio sarracenicus L. Killycreen, Ramelton.

419/8. Hieracium aurantiacum L. Grassy banks, Knocknamonagh, Letterkenny.

518/10. Physalis Franchetti Hort. Knocknamonagh, near old port, Letterkenny.

543/31. Veronica peregrina L. Cultivated ground, Imlick, Carrigans.

585/2. Prasium samia L. Knocknamonagh.

615/28. Polygonum amplexicaule Don. Bridge End, Ramelton. Var. oxyphyllum Don. Fort Stewart.

The authorities at the Herbariums at Dublin and Kew; Mr J. W. Besant, Glasnevin; Dr G. Claridge Druce, and Mr J. F. Rayner have kindly helped in the determinations.

THE FLORA OF ST KILDA.

By W. B. Turrill, M.Sc., F.L.S.

The St Kilda islands, situated some 50 miles to the west of the Outer Hebrides, have a flora of considerable phytogeographical interest in connection with studies on the origin and history of the British Flora. The following is the botanical bibliography of St Kilda so far as I have been able to trace it.

1. J. Macgillivray: Account of the island of St Kilda, chiefly with reference to its Natural History; from Notes made during a visit in July 1840, in Edinb. Philosoph. Journ. xxxii., 47, 178 (1842).
2. R. M. Barrington: Notes on the Flora of St Kilda, in Journ. Bot. xxiv., 213 (1886).
3. H. Gibson: The Phanerogamic Flora of St Kilda, in Trans. and Proc. Bot. Soc. Edinb. xix., 155 (1893).
4. R. Ll. Praeger: Flora of St Kilda (note), in Ann. Scot. Nat. Hist. 53 (1897).
5. C. J. Hewit: A contribution to a Flora of St Kilda: being a list of certain Lichens, Mosses, Hepaticae, and Fresh-water Algae, in Ann. Scot. Nat. Hist. 239 (1907).
6. W. Evans: Some Moss Records from St Kilda, in Trans. and Proc. Bot. Soc. Edinb. xxviii., 67 (1921).

In the list subsequently given here records taken from the papers 1 to 4 are designated by the letters M., B., G., P., respectively.

In July 1927 Mr J. Gladstone stayed on St Kilda just over three weeks and during that time devoted himself mainly to a study of the plant-life. As a consequence an interesting collection of 120 species was received at Kew. The careful determination of these made it obvious that a modern account of the flora especially with a full phytogeographical analysis was very desirable. We give firstly a list, complete so far as our present knowledge goes, of the Phanerogams and Vascular Cryptogams of the St Kilda islands, and, secondly, an analysis of the flora and a consideration of its origin and history. In the list the specimens quoted with numbers are those, now in Herb. Kew., collected by Mr Gladstone, while the records designated by letters are explained above. We, at Kew, are greatly indebted to Mr Gladstone for this exceptionally interesting addition to our British collections, which have been increasing so much in value during the last few years. It is unfortunate that we know little about the distribution of the species on the different islands of St Kilda. Macgillivray only visited Hirta, by which name is indicated the largest, and only permanently inhabited, island of the group. Barrington visited Hirta, Boreray, Soa, and Dun, which, he says, are the only ones on which vegetation exists. Gladstone informs me, however, that a friend of his found about four species of flowering plants growing on the islet of Levenish, so the last statement has to be modified. Barrington says he observed no plant on the smaller islands which he did not also find on Hirta and, since he does not exactly localise most of his records, I have listed them below under Hirta. Gibson and Praeger also seem to have visited only Hirta. Most of Gladstone's records are also from the main island, but quite a number are localised from Boreray.

SYSTEMATIC LIST.

Ranunculus acer L. Boreray: 7/7/27, Nr. 4; Hirta: in the glebe (the piece of land attached to the manse and between the Church and the end of the enclosed ground), 20 ft. altitude, 10/7/27, Nr. 53; Hirta: plentiful on the cliffs of the north side of Conacher, about 1100 ft., a large plant, 23/7/27, Nr. 143. The last runs down in Townsend's key in Journ. Bot. xxxviii., 379 (1900), to sub-sp. *Boraeanus*, forma *rectus*. Hirta: B. G.

Ranunculus Ficaria L. Boreray and everywhere: 7/7/27, Nr. 28. Hirta: one of the commonest plants, B. G.

Ranunculus Flammula L. Hirta: common, 5/7/27, Nr. 10. Hirta: B.G.

Ranunculus repens L. Hirta: not common; introduced? f. *alpina* Rostrup. On cliffs, B.

Brassica sp. Hirta: G.

[**Cakile maritima** Scop. Hirta: M.]

Capsella Bursa-pastoris L. Hirta: in the manse garden, 8/7/27, Nr. 30. Hirta: near houses, B. G.

Cardamine hirsuta L. Hirta: G.

[**Cochlearia danica** L. Hirta: M.]

Cochlearia officinalis L. Boreray: cliffs, extremely variable, 7/7/27. Hirta: M. Hirta: frequent; very large in places. Var. *alpina* on hills, B. Hirta: G. (as species).

Viola palustris L. Hirta: G.

Viola Riviniana Rchb. Hirta: common all over the island, 14/7/27, Nr. 68. Hirta: common, and generally with a single flower, B. (as *V. sylvatica* Fries, var. *Riviniana*). Hirta: G.? (as *V. canina* L.).

[**Polygala depressa** Wender. Hirta: flowers pink and white, but most commonly blue; forms come near *vulgaris*, B.] I am doubtful about the identification of this.

Polygala vulgaris L. Hirta: very variable, with white, pink, and blue flowers, 8/7/27, Nr. 39. Hirta: G.

[**Arenaria Peploides** L. Hirta: M.]

Cerastium tetrandrum Curt. Hirta: Oiseval, 16/7/27, Nr. 78. Hirta: common, B. G.

Cerastium vulgatum L., var. **alpinum** Gren. Hirta: Ruaival, 19/7/27, Nr. 83; north face of Conacher, about 1150 ft., 23/7/27, Nr. 141. Hirta: 5/7/27, Nr. 11, is probably this. According to B. the species (as *C. triviale* Link) is common; a large-flowered form, var.

alpestre, with flowers often solitary, occurs on summits of hills. Hirta: G. (as *C. triviale* Link).

Lychnis Flos-cuculi L. Hirta: at the foot of an Amhuinn, 9/7/27, Nr. 43. Hirta: frequent, B. G.

Sagina subulata Presl (Wimm.). Hirta: rare; on end of St Kilda near the Doon, B.

Sagina procumbens L. Hirta: common, 7/7/27, Nr. 19. Hirta: common, B. G.

Silene acaulis L. Hirta: one clump in the glen which comes off Mullach Sgail, no flowers at all, 9/7/27, Nr. 44. Hirta: very rare; only in two places on St Kilda, the end near the Doon, B. G.

Silene maritima With. Hirta: abundant on the cliffs, 10/7/27, Nr. 50a. On the rocks south-west of Conacher, 10/7/27, Nr. 59. Hirta: M. Hirta: abundant on cliffs; sparingly on hills over sea, B. G.

Spergula arvensis L., agg. Hirta: a weed in the corn, 13/7/27, Nr. 67. Not exactly determinable in the absence of seeds. Hirta: in cultivated ground, B. G.

Stellaria media Vill. Hirta: growing in the corn, 5/7/27, Nr. 9 (rather short pedicels and glabrous calyces); 22/7/27, Nr. 119 (longer pedicels, larger and hairy calyces). Hirta: common, B.

Stellaria uliginosa Murr. Hirta: P.

Montia fontana L. Hirta: north-western end opposite Soa, 6/7/27, Nr. 16. Hirta: common. Var. *rivularis*. Frequent, B. Hirta: G. (as species).

Hypericum pulchrum L., f. procumbens Rostrup [in Bot. Tidsskr. iv., 34 (1870-71)]. Hirta: not very common, 8/7/27, Nr. 38. Hirta: rare; in one spot in the gully on Conacher (as species), B. G.

Trifolium pratense L. Hirta: G.

Trifolium repens L. Hirta: common up to 100 ft., 9/7/27, Nr. 46. Hirta: common, B. G.

Vicia sepium L. Hirta: sparingly among grass on an Cambir, 500-700 ft., the only place on the island, 14/7/27, Nr. 70. Hirta: rare; on the cliffs near Soa and also on the island of Soa, B. G.

Potentilla Anserina L. Hirta: in the manse garden and elsewhere, 20-100 ft., 11/7/27, Nr. 60. Hirta: near houses, B. G.

Potentilla erecta Hampe. Hirta: very common indeed, 9/7/27, Nr. 48. Hirta: common, B. (as *Potentilla tormentilla* Neck.) G.

Saxifraga oppositifolia L. Hirta: an Amhuinn Mhòr, plentiful but hardly a flower left, 8/7/27, Nr. 34. Hirta: only in the gully on Conacher, behind the village, B. G.

Sedum anglicum Huds. Hirta: M. Recorded with a ? by B.

Sedum roseum Scop. Hirta: on the cliffs at the north-western end opposite Soa, 6/7/27, Nr. 15. Hirta: M. (as *Rhodiola rosea*). Hirta: called by the natives "Usanion;" plentiful and luxuriant on cliffs, B. (as *S. Rhodiola* DC.) G.

Drosera rotundifolia L. Hirta: about 15 plants only in the little bog near an Amhuinn Mhòr, about 500 ft., 22/7/27, Nr. 120. Hirta: G.

Callitriche stagnalis Scop.? Hirta: on the western side opposite Soa. 6/7/27, Nr. 13. B. and G. both record *Callitriche vernalis* Koch. It is evident that more, and good, material, is very desirable.

Epilobium palustre L. Hirta: Oiseval cliffs only, about 300 ft., 16/7/27, Nr. 75. Hirta: G.

Angelica silvestris L. Hirta: plentiful on cliffs but seldom flowers. 11/7/27, Nr. 24. Hirta: plentiful on cliffs in many places, B. G.

Hydrocotyle vulgaris L. Hirta: very common, 10/7/27, Nr. 58. Hirta: plentiful, B. G.

Ligusticum scoticum L. Hirta: a little on the Oiseval cliffs; one patch on Dun, about 300 ft., 11/7/27, Nr. 62. Hirta: M.

Lonicera Periclymenum L. Hirta: in one spot on the Oiseval cliffs. 250 ft., 15/7/27, Nr. 72. Occurs in some quantity just here and flowers well. Hirta: in one spot only to the east of landing places, on cliff, B. G.

Sambucus nigra L. Hirta: only three plants in the churchyard, 21/7/27, Nr. 113. Hirta: G.

Galium saxatile L. Hirta: very common, 8/7/27, Nr. 40. Hirta: common, B. G.

Scabiosa Succisa L. Hirta: abundant, not yet generally in flower, 21/7/27, Nr. 104. Hirta: everywhere, B. G.

Achillea Millefolium L., var. villosa Hartm. Hirta: not uncommon below 300 ft., 20/7/27, Nr. 99. Hirta: common, B. (as the species) G.

Antennaria dioica Gaertn. Hirta: common on the south sides of Conacher and Oiseval, 200-500 ft., 10/7/27, Nr. 54. Hirta: common, B. (as *Gnaphalium dioicum* L.) G.

Artemisia vulgaris L. Hirta: G.

Bellis perennis L. Hirta: only one clump found at an altitude of about 400 ft. on the sheltered S.W. slope of Conacher. Possibly introduced. 10/7/27, Nr. 57.

Chrysanthemum segetum L. Hirta: a common weed in the oats, 50 ft., 12/7/27. No. 63. Hirta: M. Hirta: the principal weed in the oats, B. G.

Cirsium arvense Scop. Hirta: only outside the factor's house, on a rubbish heap, 21/7/27, Nr. 102.

Cirsium lanceolatum Scop. Hirta: a few plants near the factor's house, the store, and on Oiseval. 21/7/27. Nr. 100. Hirta: near the village, B. (as *Carduus lanceolatus* L.), G. (as *Cnicus lanceolatus* Hoffm.).

Leontodon autumnalis L. Hirta: very common, 9/7/27, Nr. 45. Hirta: very common, B. G.

Matricaria maritima L. Boreray and Hirta: 7/7/27, Nr. 20. One specimen discoid fasciated. Hirta: has spread itself over a large part of the manse garden and there is no difference visible between this and the plant growing on the cliffs, 22/7/27, Nr. 126. Hirta: M. (as *Pyrethrum inodorum*, the maritime variety). Hirta: on the cliffs, B. (as *Matricaria inodora* L., var. *salina*), G. (as *M. inodora* L., var. *maritima*).

SENECIO AQUATICUS Huds. Hirta: frequent, B.

SENECIO JACOBAEA L. Hirta: not common, late flowering, 21/7/27, Nr. 101; 23/7/27, Nr. 140; Hirta: frequent, B. G.

SENECIO VULGARIS L. Hirta: in the manse garden, 8/7/27, Nr. 32.

SONCHUS ASPER Hill. Hirta: sparingly on Oiseval cliffs, 200 ft., 16/7/27, Nr. 74. Hirta: P. Recorded with a ? by B.

SONCHUS OLERACEUS L. Hirta: G.

TARAXACUM sp., probably *T. paludosum* Schlecht. Hirta: common, 23/7/27, all the flowers are over by now, Nr. 142. Hirta: M. (as *Leontodon taraxacum*, var. *palustre*). Hirta: common; growing in the wildest and most exposed situations, B. (as *Taraxacum officinale* L., var. *palustre*), G. (as *Taraxacum officinale*).

VACCINIUM MYRTILLUS L. Hirta: on the south side of Conacher, 1200-1300 ft., very scrubby, probably neither flowers nor fruits, 23/7/27, Nr. 137. Hirta: on the top of Conacher, B. G.

CALLUNA VULGARIS Salisb. Hirta: common, B. G.

ERICA CINEREA L. Hirta: fairly plentiful, 8/7/27, Nr. 36. Hirta: plentiful, B. G.

ARMERIA MARITIMA Willd. Hirta: very common, large and small, 4/7/27, Nr. 5. Hirta: M. (as *Statice Armeria*), B. G.

ANAGALLIS TENELLA Murr. Hirta: on Oiseval and the south of the island, 9/7/27, Nr. 47. Hirta: M. B. G.

PRIMULA VULGARIS Huds. Hirta: an Amhuinn Mhòr, near the sea, 8/7/27, Nr. 37. Fide A. E. Cockburn, Boreray: on cliffs near the sea. Hirta: plentiful on some of the cliffs, B. G.

[**CENTAURIUM** sp. (as *Erythraea Centaurium*, var. *latifolium*). Hirta: M.]. This remains a doubtful record.

GENTIANA CAMPESTRIS L. Hirta: a good many plants at the mouth of the stream running off Mullach Sgail, 60 ft., 13/7/27, Nr. 65. Hirta: M.

MYOSOTIS ARVENSIS Hill. Hirta: on a little mound outside the factor's house, 9/7/27, Nr. 12. Hirta: G.

ALECTOROLOPHUS DRUMMOND-HAYI Sterneck. Hirta: rare, on the south-western slopes of Conacher, 500 ft., 10/7/27, Nr. 55. B. records "*Rhinanthus Crista-galli* L. Rare," and G. also lists this name.

EUPHRASIA CURTA Wettst., var. **GLABRESCENS** Wettst. Hirta: very common and many forms, 10/7/27, Nr. 52. It would be interesting to have a complete set of the "forms" of Eyebright from St Kilda. B. records "*Euphrasia officinalis* L. Specimens stunted and flowers purplish," and G. also lists this name.

PEDICULARIS SILVATICA L. Hirta: very common, there is also a white-flowered variety, 21/7/27, Nr. 105. Hirta: very common, B. G.

VERONICA OFFICINALIS L. Hirta: plentiful all over the island, 22/7/27, Nr. 122. Hirta: frequent, B. G.

Pinguicula vulgaris L. Hirta: common all over, 6/7/27, Nr. 14. Hirta: not uncommon, B. G.

Galeopsis Tetrahit L. Hirta: only as a weed in the corn, 22/7/27. Nr. 121. Hirta: B. G.

Prunella vulgaris L. Hirta: not common, 14/7/27. Nr. 66. Hirta: not common, B. G.

Thymus Serpyllum L. Hirta: everywhere, 5/7/27, Nr. 8. The specimen is not a very good one and since much of the British material of the genus possessed by Kew is at present on loan for critical determination I have used the aggregate name. B. records "*Thymus Serpyllum* L. Abundant." G. lists *Thymus Serpyllum* Fries.

Plantago Coronopus L. Hirta: village bay, 4/7/27, Nr. 2 (large well developed form); Hirta: 5/7/27, Nr. 42 (a small form, var. *pygmaea* Lange). Hirta: B.

Plantago lanceolata L. Hirta: village bay, 4/7/27, Nr. 3. Small rounded spikes of flowers, and varying in the degree of development of silky hairs on the leaves. Hirta: B. G.

Plantago major L. Hirta: in the manse garden, 50 ft., 15/7/27, Nr. 78. Hirta: B. G.

Plantago maritima L. Hirta: village bay, 4/7/27, Nr. 1. Hirta: plentiful, and very variable. Var. *pygmaea* Lange. Plentiful. B. G.

Atriplex Babingtonii Woods. Hirta: on the cliffs everywhere, very variable, but always mealy, 9/7/27, Nr. 49. Hirta: B. G. Probably the *Atriplex maritima* of M. is this species.

[**Salsola Kali** L. Hirta: M.]

Oxyria digyna Hill. Hirta: M. (as *O. reniformis*). Hirta: on the north face of Conacher; rare, B. G.

Polygonum aviculare L. Hirta: manse garden, 20 ft., 11/7/27. Nr. 61. Hirta: B. G.

Polygonum sp. (perhaps *P. Persicaria* L.) Hirta: very rare in the manse potatoes only, 21/7/27. Nr. 107. G. lists *Polygonum Persicaria* L.

Rumex Acetosa L. Boreray: on cliffs, 7/7/27, Nr. 25. Hirta: in great abundance, and most luxuriant on cliffs at north of island, B. G.

Rumex Acetosella L. Hirta: frequent, 22/7/27. Nr. 123. Hirta: common, B. G.

Rumex conglomeratus Schreb. Hirta: near the houses, B.

Rumex crispus L. Hirta: near the houses, 21/7/27, Nr. 116. Hirta: near the houses, B. G.

Rumex obtusifolius L. Boreray: in two patches, 7/7/27. Nr. 23. Hirta: near the houses, 21/7/27. Nrs. 114, 115. Hirta: near the houses, B. G.

Urtica dioica L. Hirta: only in the churchyard, about 150 ft., and in one spot near the sea cliff, about 40 ft., 21/7/27, Nr. 112. Hirta: frequent, B. G.

SALIX HERBACEA L. Hirta: on the summit of one of the hills, M. Hirta: north face of Conacher, and descending to about 500 ft., B. G.

SALIX REPENS L. Hirta: an Amhuinn Mhòr, 8/7/27, Nr. 41: an Amhuinn Mhòr, 22/7/27, Nr. 124. Hirta: on Conacher, near village, etc. Var. *incubacea*, B. G. (species).

EMPETRUM NIGRUM L. Hirta: 8/7/27, Nr. 35, does not seem to flower or bear fruit, 14/7/27, Nr. 71. Hirta: on hill-tops, B. G.

[COELOGLOSSUM VIRIDE Hartm. (as *Habenaria viridis*). Hirta: M.]

ORCHIS MACULATA L. (O. ERICETORUM Linton). Hirta: extremely common, very small, flowers often white, 5/7/27, Nr. 7. Hirta: common, B. G.

IRIS PSEUDACORUS L. Hirta: St Kilda's Well, an Amhuinn Mhòr, 9/7/27, Nr. 50. Hirta: B. G.

NARTHECIUM OSSIFRAGUM Huds. Hirta: common, 20/7/27, Nr. 91. Hirta: B. G.

JUNCUS BUFONIUS L. Hirta: above the beach on the village bay, 20 ft., 13/7/27, Nr. 64. Hirta: G.

JUNCUS BULBOSUS L. Hirta: the marsh south of the village, 21/7/27, Nr. 108. Hirta: B. (as *J. supinus* Moench) G.

JUNCUS EFFUSUS L. Hirta: not uncommon, 21/7/27, Nr. 99a. Hirta: B. G. (as *J. communis* L.).

JUNCUS LAMPROCARPUS Ehrh. Hirta: everywhere, 19/7/27, Nr. 87. Hirta: G.

JUNCUS SQUARROSUS L. Hirta: on Conacher only, from 800 ft. to the top, 23/7/27, Nr. 136. Hirta: B. G.

LUZULA CAMPESTRIS DC. Hirta: common, 20/7/27, Nr. 92. Hirta: B.

LUZULA MULTIFLORA Lej. Hirta: 20/7/27, Nr. 93. Hirta: B.

LUZULA SILVATICA Gaud. Hirta: on the top of the island in large quantities descending a little down an Amhuinn Mhòr, 23/7/27, Nr. 130. Hirta: plentiful on the summit, 1220 ft., B.

POTAMOGETON POLYGONIFOLIUS Pourr., var. ERICETORUM Syme. Hirta: in stagnant peaty ponds, North Bay, 10/7/27, Nr. 56. Hirta: B. (as species). G. lists *Potamogeton natans* L. and the record probably refers to the above plant.

CAREX BINERVIS Sm. Hirta: round the summit of Conacher, descending to about 1000 ft., 23/7/27, Nr. 132. Hirta: B. G.

CAREX STELLULATA Good. Hirta: common, 21/7/27, Nr. 97. Hirta: B. G.

CAREX FLACCA Schreb. Hirta: in the marsh in the village bay, 21/7/27, Nr. 111. Hirta: B. (as *C. glauca* Scop.).

CAREX FLAVA L. Hirta: common over the island, 19/7/27, Nr. 72. A very small form but too young to determine more exactly. Hirta: the marsh in the village bay, 21/7/27, Nr. 110. A larger form. Hirta: B. Var. *minor* Townsend. Hirta: G.

CAREX GOODENOWII Gay. Hirta: 20/7/27, Nr. 95; an Amhuinn Mhor, 23/7/27, Nr. 131. One piece has the utricles asperulous, and the specimens are not quite typical *C. Goodenovii* as it grows in the south of England. Hirta: B. (as *C. vulgaris* Fries).

Carex panicea L. Hirta: 19/7/27, Nr. 88. Hirta: B.

Carex pilulifera L. Hirta: B. G.

Carex pulicaris L. Hirta: near Ruaival, about 400 ft., 19/7/27, Nr. 82. Hirta: B. G.

Carex rigida Good. Hirta: on the summit of one of the hills, M. Hirta: seen on the top of Conacher, 1220 ft. Hirta: G.

Eleocharis uniglumis R. et S. Hirta: village bay in the marsh, 2 ft., 19/6/27, Nr. 84. Recorded by B. with a ? (as *Scirpus uniglumis* Link). G. lists *E. palustris* R. Br. and the record probably refers to the above plant.

Eriophorum angustifolium Roth. Hirta: common in peaty soil all over the island, 14/7/27, Nr. 71. Hirta: B. G.

Schoenus nigricans L. Hirta: B.

Scirpus caespitosus L. Hirta: abundant on the south face of Conacher, 500-1100 ft., 23/7/27, Nr. 129. Hirta: B. G.

Agropyron repens Pal. de Beauv. Hirta: B. (as *Triticum repens* L.) G.

Agrostis canina L. Hirta: G.

Agrostis stolonifera L. Hirta: Oiseval, 17/7/27, Nr. 81 (one piece awned, var. *armata* Cel., the rest typical); Hirta: common, 22/7/27, Nr. 119 (var. *pro-repens* Koch).

Agrostis tenuis Sibth. Hirta: 23/7/27, Nr. 135; Oiseval, 17/7/27, Nr. 82 (var. *pumila* Lightf.). Hirta: G. (as *Agrostis vulgaris* With. and var. *pumila*).

Aira praecox L. Hirta: the glen, on a cleit, near the village, 14/7/27, Nr. 69. Hirta: B. G.

Alopecurus geniculatus L. Hirta: the marsh, south of the village, 21/7/27, Nr. 109. Hirta: B. G. (with a ?).

Anthoxanthum odoratum L. Hirta: B. G.

Arrhenatherum elatius Mert. et Koch, var. tuberosum Aschers. Hirta: 3 or 4 large tufts on the edge of an Amhuinn Mhòr, about 200 ft., 22/7/27, Nr. 125. Hirta: G. (as *Avena elatior* L.).

[Avena strigosa Schreb. Hirta: M.]

Deschampsia flexuosa Trin. Hirta: an Amhuinn Mhòr, 23/7/27, Nr. 134. Hirta: B. (as *Aira flexuosa* L.) G.

Festuca ovina L. Hirta: M. Hirta: often viviparous, B. G. (as species, var. *vivipara*, and var. *arenaria*).

Festuca rubra L. Hirta: common, 20/7/27, Nr. 90; 21/7/27, Nr. 98 (viviparous): an Amhuinn Mhòr, outside the enclosed ground, about 300 ft., 22/7/27, Nr. 128 (sub-sp. *genuina* Hack., forms with more or less glabrous spikelets). Hirta: B. (as var. *duriuscula*). G. (as *F. ovina*, sub-sp. *duriuscula* and sub-sp. *rubra*).

Holcus lanatus L. Hirta: abundant in the enclosed area, 21/7/27, Nr. 117. A form with rather small, compact, cylindrical panicles. Hirta: B. G.

Hordeum vulgare L. Hirta: Nr. 125. This was formerly grown by all in the island, but there is now only one patch of it, though it has spread as a weed into the corn.

[Koeleria gracilis Pers.? (as *Aira cristata*). **Hirta: M.**]

Lolium perenne L. Hirta: in the manse garden, 19/7/27, Nr. 86. Hirta: G.

Molinia caerulea Moench. Hirta: common, 21/7/27, Nr. 89; an Amhuinn Mhòr, about 30 ft., 24/7/27, Nr. 144 (var. *depauperata* Aschers. et Graebn.). Hirta: B. G.

Nardus stricta L. Hirta: Ruaival, 19/7/27, Nr. 85. Hirta: B. G.

Poa annua L. Hirta: common everywhere, 23/7/27, Nr. 127. Hirta: B. G.

Poa pratensis L. Hirta: not plentiful, 23/7/27, Nr. 133. Hirta: B. G.

Poa trivialis L., var. glabra Doell. Hirta: common, 22/7/27, Nr. 119a. Hirta: B. (the species) G.

Sieglingia decumbens Bernh. Hirta: Oiseval cliffs, 16/7/27, Nr. 79. Hirta: G. (as *Triodia decumbens* Beauv.).

[Trisetum flavescens Pal. de Beauv. (as *Avena flavescens*). Hirta: M.]

Asplenium Adiantum-nigrum L. Hirta: G.

Asplenium marinum L. Hirta: on the Oiseval cliffs, 200 ft., 15/7/27, Nr. 73. Hirta: M. B. G.

Athyrium Filix-femina Roth. Hirta: not uncommon, 22/7/27, Nr. 126. Hirta: G.

Blechnum Spicant With. Hirta: western end, opposite Soa, 6/7/27, Nr. 17. Hirta: B. (as *Lomaria Spicant* Desv.) G.

Botrychium Lunaria Sw. Hirta: in a gully running out of Mullach Sgail, 13/7/27, Nr. 6. Hirta: M. Hirta: near landing place, B. G.

Cystopteris fragilis Bernh. Hirta: western end, opposite Soa, 4/7/27, Nr. 18 (? var. *dentata* Hook.); Conacher, 23/7/27, Nr. 138 (? var. *dentata* Hook.); Conacher, 23/7/27, Nr. 139 (? var. *Dickieana* Milde). Hirta: B. (as var. *dentata*).

Hymenophyllum peltatum Desv. Hirta: rare on south side of Conacher, B. (as *H. unilaterale* Willd.) G.

Dryopteris aristata Druce. Hirta: B. (as *Nephrodium dilatatum* Desv.) G.

Ophioglossum vulgatum L., var. polyphyllum Braun. Hirta: among short grass near the extreme north end of St Kilda, B. (as *O. vulgatum* L., var. *ambiguum*). G. (as species).

Polypodium vulgare L. Hirta: Oiseval, 16/7/27, Nr. 77. Hirta: B. G.

Eupteris aquilina Newm. Hirta: common in the enclosed ground, 16/7/27, Nr. 80. Hirta: B. G.

Equisetum arvense L. Hirta: in the enclosed ground, common, 20/7/27, Nr. 96. Hirta: B. G.

Equisetum palustre L. Hirta: P.

Selaginella Selaginoides Gray. Hirta: seen at 100 ft. and at 1100 ft., very small and difficult to spot, 21/7/27, Nr. 106. Hirta: rare. B. G.

ANALYSIS OF THE FLORA.

I. Native, original vegetation.

a. Aquatic and marsh species.—*Ranunculus Flammula*, *Viola palustris*, *Lychnis Flos-cuculi*, *Stellaria uliginosa*, *Montia fontana*, *Callitriche stagnalis*, *Senecio aquaticus*, *Iris Pseudacorus*, *Juncus bufonius*, *J. bulbosus*, *Potamogeton polygonifolius*, *Eleocharis uniglumis*, *Alopecurus geniculatus*, *Equisetum palustre*.

b. Species of sea-cliffs and rocks.—*Cochlearia officinalis*, *Silene maritima*, *Ligusticum scoticum*, *Matricaria maritima*, *Armeria maritima*, *Plantago Coronopus*, *P. maritima*, *Atriplex Babingtonii*, *Asplenium marinum*. In addition, *Epilobium palustre* and *Angelica silvestris* are recorded from "cliffs."

c. Arctic-alpine species, mostly very rare in St Kilda.—(*Cerastium vulgatum*, var. *alpinum*), *Silene acaulis*, *Saxifraga oppositifolia*, *Sedum roseum*, *Antennaria dioica*, *Oxyria digyna*, *Salix herbacea*, *Carex rigida*.

d. Heath-moor species.—*Ranunculus acer*, *Viola Riviniana*, *Polygala vulgaris*, *Sagina subulata*, *Hypericum pulchrum*, *Potentilla erecta*, *Drosera rotundifolia*, *Hydrocotyle vulgaris*, *Galium saxatile*, *Scabiosa Succisa*, *Taraxacum paludosum*, *Vaccinium Myrtillus*, *Calluna vulgaris*, *Erica cinerea*, *Anagallis tenella*, *Gentiana campestris*, *Alectorolophus Drummond-Hayi*, *Euphrasia curta*, *Pedicularis silvatica*, *Veronica officinalis*, *Pinguicula vulgaris*, *Thymus Serpyllum*, *Rumex Acetosella*, *Salix repens*, *Empetrum nigrum*, *Orchis maculata*, *Narthecium ossifragum*, *Juncus effusus*, *J. lamprocarpus*, *J. squarrosus*, *Luzula campestris*, *L. multiflora*, *Carex binervis*, *C. stellulata*, *C. flacca*, *C. fulva*, *C. Goodenovii*, *C. panicea*, *C. pilulifera*, *C. pulicaris*, *Eriophorum angustifolium*, *Schoenus nigricans*, *Scirpus caespitosus*, *Agrostis canina*, *A. stolonifera*, *A. tenuis*, *Aira praecox*, *Deschampsia flexuosa*, *Festuca ovina*, *F. rubra*, *Molinia caerulea*, *Nardus stricta*, *Sieglingia decumbens*, *Asplenium Adiantum-nigrum*, *Athyrium Filix-femina*, *Blechnum Spicant*, *Botrychium Lunaria*, *Cystopteris fragilis*, *Hymenophyllum peltatum*, *Dryopteris aristata*, *Ophioglossum vulgatum*, *Polypodium vulgare*, *Eupteris aquilina*, *Selaginella Selaginoides*.

e. Relicts of woodland ground flora?—*Ranunculus Ficaria*, *Vicia sepium*, *Lonicera Periclymenum*, *Primula vulgaris*, *Luzula silvatica*.

II. Modified vegetation.—*Ranunculus repens*, *Cerastium tetrandrum*, *C. vulgatum*, *Sagina procumbens*, *Trifolium repens*, *Achillea Millefolium*, *Bellis perennis*, *Leontodon autumnalis*, *Senecio Jacobaea*, *Prunella vulgaris*, *Plantago lanceolata*, *Rumex Acetosa*, *Arrhenatherum elatius*, *Holcus lanatus*, *Poa annua*, *P. pratensis*, *P. trivialis*.

III. Introduced plants.

a. Weeds of cultivated ground.—*Capsella Bursa-pastoris*, *Cardamine hirsuta*, *Spergula arvensis*, *Stellaria media*, *Chrysanthemum segetum*, *Senecia vulgaris*, *Galeopsis Tetrahit*, *Plantago major*, *Polygonum aviculare*, *P. Persicaria*, *Agropyron repens*.

b. Ruderals.—*Potentilla Anserina*, *Artemisia vulgaris*, *Cirsium arvense*, *C. lanceolatum*, *Sonchus asper*, *S. oleraceus*, *Myosotis arvensis*, *Rumex conglomeratus*, *R. crispus*, *R. obtusifolius*, *Urtica dioica*, *Equisetum arvense*.

c. Escapes from cultivation.—*Brassica* sp., *Trifolium pratense*, *Sedum anglicum* (?), *Sambucus nigra*, *Hordeum vulgare*, *Lolium perenne*.

IV. Doubtful records (not at present accepted).—*Cakile maritima*, *Cochlearia danica*, *Polygala depressa*, *Arenaria Peploides*, *Centaurium* sp., *Salsola Kali*, *Coeloglossum viride*, *Avena strigosa*, *Koeleria gracilis*, *Trisetum flavescens*.

The following comments may be made on these groups of species:—

1. The doubtful records are mostly from Macgillivray's account and include four maritime species which may well occur in St Kilda. In this connection it is important to remember that Gladstone has collected several species which but for his keen field observations would have been included amongst the doubtful records (e.g. *Ligusticum scoticum*). Nevertheless, it has been considered best not to include the species given under paragraph IV. in any of the theoretical considerations which follow. They are, therefore, ignored in the rest of this paper.

2. The introduced plants owe their origin intentionally or unintentionally to man. The majority are either weeds, whose seeds doubtless came in with the seeds of crop plants (chiefly oats and barley), or camp-followers found in waste places in all temperate regions and introduced in various ways by man's activities. In St Kilda the majority are limited to the enclosed ground in Hirta, near the village.

3. The species listed under paragraph II. are tentatively grouped together because in heaths in various parts of the British Isles (Surrey, Yorkshire, western Scotland) they occur in areas obviously derived from the original heath by biotic factors (grazing, trampling, etc.). For eastern and southern English heathlands the "grass-heath" community is described in some detail by Farrow in Journ. Ecol. iv., 57 seq. (1916), and by Summerhayes, Cole, and Williams in Journ. Ecol. xii., 293 seq. (1924). Ostenfeld [in Warming: Botany of the Faeroes, 962 seq. (1908)] describes a "grass slope" community, and similar types of vegetation are common in Iceland. While for St Kilda any similar type of community as such must be considered as derived under the influence of man and his introduced animals, this does not solve the phytogeographical problem of the origin in the islands of the species involved. They

are all species of wide distribution in the North Temperate Region and most of them occur in a wide range of habitats, but rarely as dominant plants unless the substratum or vegetation has been modified by man. I am inclined to think that most of the species enumerated have been introduced to St Kilda by man but it is not possible to speak with the same assurance as for the species listed in paragraph III.

4. Of the native species forming the original vegetation those which suggest they may be relicts of a woodland ground flora are particularly interesting. They are only five in number, and though outside St Kilda they are not entirely limited to woods they are usually found in forest or brushwood. The general distributions of all five are wide in the North Temperate Region. The species are worth considering individually. *Ranunculus Ficaria* is said to be "one of the commonest plants" and to occur "everywhere." Druce for the Shetlands [Flora Zetlandica, in Report Bot. Soc. and Exch. Club. 1921, 459 (1922)] considers it has there been possibly introduced by man. For the British Isles its usual method of multiplication is vegetative, but this can scarcely be held as evidence against its being native. McNeil records it for Colonsay as "abundant in situations that, later on, are overgrown with bracken" [Colonsay (1910) 96]. Its tuberous roots are said to be scraped up in winter and eaten by pheasants, and they are also used by the inhabitants as a cure for piles, corns, etc. It has been introduced into the Faeroes [Botany of the Faeroes 854 (1908]. *Vicia sepium* is certainly to be regarded as a native species though of very limited occurrence. In Great Britain it is usually a plant of wood-edges, hedgerows, shady banks, and roadsides, and even in moderately shady situations in woods. It is recorded for Colonsay (McNeil) and for the island of Harris [Balfour & Babington, A Catalogue of the Plants gathered in the Islands of North Uist, Harris, and Lewis, in Trans. Bot. Soc. Edinb. I., 148 (1843?)]. *Lonicera Periclymenum* is rather a surprising plant to find flowering luxuriantly in St Kilda. It is there of local occurrence, but since it is found right away from the houses and is also known from the Outer Hebrides and from Colonsay I must consider it a native. It might have been introduced by birds (see considerations of bird dispersal below) but it may also be a member of the pre-glacial vegetation, and indeed a relict of woods or brushwood. *Primula vulgaris* seems to occur in St Kilda chiefly near the sea, often on cliffs. It is not a member of the dominant heath-moor vegetation and has the appearance of being a relict. It occurs in the Outer Hebrides and in Colonsay. Druce (*l.c.* 504) records it as common in the Shetlands and it is "most likely a native" in the Faeroes [Botany of the Faeroes 50 (1901)]. *Luzula silvatica*, though in England and elsewhere often a woodland plant, in the north is frequently found on rock ledges and grassy slopes. Its occurrence "in large quantities" on the top of the island is noteworthy, but loses some of its possible significance when it is remembered that it is widely distributed in Scotland, the Shetlands, and the Faeroes outside woodlands and where it can scarcely be regarded as a forest or brushwood relict.

We are forced to conclude then, that while at least five species of the flora of St Kilda may be woodland relicts, the floristic evidence by itself is insufficient for us to postulate the previous existence of tree or brushwood communities on St Kilda. The species concerned are approaching their northern limits under oceanic conditions in St Kilda and their occurrence in herbaceous or suffruticose communities is perhaps connected with this, since there is a tendency for species to have a different ecological behaviour at the limits of their distribution areas. On the other hand it must be recalled that work on the Scottish peat bogs, and especially that by the modern method of pollen analysis, has indicated that in earlier post glacial times trees and forests had a more northern distribution in the British Isles than they have at present [see a summary of the recent work on pollen analysis and post-glacial vegetation in Bot. Gaz. lxxxiii., 323 (1927)]. More exactly G. Erdtman [Studies in the Micropalaeontology of Post-glacial Deposits in Northern Scotland and the Scotch Isles, with especial reference to the history of the woodlands, in Journ. Linn. Soc. Bot. xlvi., 449 (1924)] has shown that woods of birch, pine, and other trees were more widely distributed in the north and west of Scotland, including the islands, than they are at present. His investigations included some of the Hebrides and the Shetlands but not St Kilda. It is obvious that an examination for pollen of St Kilda peat is very desirable as a means of proving the previous existence of forests.

5. The small "arctic-alpine" element consists of species all of which have a very wide circumpolar distribution and extend on high which have a very wide circumpolar distribution and extend, on high mountains, far to the south in one or more of the continents. They are just sufficient to indicate the northern latitude of St Kilda (57 deg. 50 the last Ice Age.

6. The plants particularly characteristic of the sea-cliffs and rocks are not so numerous as might be expected, but this may be due to insufficient collecting on the wonderful steep cliffs, a process not lacking in danger. It should be noted that four of Macgillivray's records would come in here if substantiated. All the accepted species are of wide distribution and the phytogeographical problems connected with them are not peculiar to St Kilda but have an import beyond the scope of this paper. There is no reason for supposing the species placed in this category to be of recent introduction, but the evidence favours accepting them, with the aquatic and marsh and the heath-moor types, as constituting part of the old natural vegetation.

7. The aquatic and marsh species are mostly found in the small marsh at the head of Village Bay. There are only two or three perennial streams, of which that proudly known as "an Amhuinn Mhòr"—the great river—is the largest, and descends from Conacher, the highest hill, to the Village Bay. There is thus little fresh water for aquatic vegetation, but obviously several of the plants here listed under the heath-moor category might well be included also with the marsh species. The distinction, in the field, between marsh, bog, moor, and heath is

not always sharp, especially in the northern parts of the British Isles. No special comment is called for in considering the St Kilda fresh-water plants. They are all widely distributed species and are probably, with perhaps a few exceptions, an old element in the flora.

8. We come now to a consideration of the dominant element in the flora—what is here termed the heath-moor element. The basic differences between heath and moor and between marsh and bog are usually emphasised in the text books. In practical field surveys, however, especially at higher latitudes or altitudes, we frequently find within comparatively small areas a convergence of these types of vegetation so that an easily graded series from one extreme to the other may be traced. The specific constitution in any one spot is related to environmental conditions which are very local and which can only be discovered by careful observation and experiment in the field. It follows that in any general account, such as this, it may be undesirable to attempt a further subdivision and we must consider the heath-moor type as one. Obviously the majority of the species, and especially the dominant and subdominant ones, are such as characterise the grouse-moors of Scotland and Yorkshire. These are usually considered as heaths botanically [see W. G. Smith in Tansley, Types of British Vegetation 113 (1911)]. Yet certain high moor and bog plants also occur. There is no doubt that this heath-moor type of vegetation is the dominant original type for St Kilda. That the biotic factor of grazing has modified it, is probable, but to what degree it is difficult to say. Some 1200 sheep roam the hills, and Soa has its own distinct breed which is kept uncontaminated [see R. Lydekker, The Sheep and its Cousins, 59 (1912) and the references given there]. It is unlikely that the sheep have exterminated or introduced any species of the St Kilda flora and it is by keeping down the higher growths of the suffruticose perennials, by grazing down the grasses, and by increasing the "modified vegetation" referred to above at the expense of the original heath-moor that we must expect them to influence the plant life. "Burning the heather" is sometimes done but apparently neither regularly nor over large areas. The violent storms of winter and the full exposure to the fury of the Atlantic gales make it probable that since St Kilda has had approximately its present configuration and island topography the heath-moor vegetation has been the climatic climax even apart from existing biotic factors. It follows that the species of the heath-moor vegetation must for the most part be relatively old in St Kilda.

In attempting to define "relatively old" a little more exactly one is confronted with many unsolved problems and only tentative working hypotheses can be put forward. I have been unable to obtain evidence that St Kilda was glaciated during the Quarternary Ice Age or Ages. It might well be that its flora, as represented by the dominant heath-moor types, survived the Ice Age in the islands, either these escaping glaciation owing to their oceanic position or plants continuing to exist on local nunataks. Postulating this pre-glacial origin for the main mass of the heath-moor flora one is in the main in agreement with the recent views of Dr Woodhead with regard to the heaths of the Pennines [see Journ. Bot. lxii., 301 (1924), and The Naturalist 245 (1926)]. It should be noted that this view applies only to the northern heath-moor flora and vegetation, and to the arctic-alpine element. Personally I cannot accept the view that the southern element (including the Lusitanian) survived the Ice Age in the British Isles. If then the heath-moor flora is post-glacial in origin there are still two possibilities: either it reached St Kilda before this became an island, or it migrated across the sea. Since I favour the former view it is essential to consider in some detail the possibilities of the latter. It is unlikely on botanical grounds that ocean currents account for any of the species in our list. Moreover, the direction of ocean currents in the North Atlantic Ocean is not strongly in favour of such a possibility (see the Charts given in The Botany of the Faeroes, pp. 813-815). As regards winds we must remember that the most constant and the strongest blow from the south-west, west, and north, i.e. from the open ocean. A few of the species have seeds or fruits with a structure suitable for wind dispersal (e.g. *Salix repens*, *Eriophorum angustifolium*) and still more have small light seeds or spores. If the winds usually blew from the Hebrides it might be admissible to accept wind dispersal over the 50 or so miles of sea for a majority of the species, but since this is not so it is not advisable to accept this factor as working now. The last long-distance dispersal agents over sea areas (apart from man) are birds. A considerable number of migratory birds, both land birds and sea birds, are recorded for St Kilda (see Macgillivray *l.c.*, also papers by Mackenzie and by Waterston in Ann. Scot. Nat. Hist. 1905, pp. 75, 141, 199). It is very possible that a few species have been introduced by them (notably *Lonicera Periclymenum* listed with the possible wood relicts) but it is at least doubtful if they account for many of the species. The evidence for bird carriage over long distances of sea in north-western Europe is a controversial subject. Thus in "The Botany of the Faeroes" Ostenfeld (pp. 116 seq.) gives and agrees with the opinion of the ornithologist Andersen that "migratory birds are of hardly any importance as disseminators of plants," while Warming (pp. 676 seq.) and Börgesen (pp. 809 seq.) believe that seeds, etc., can be and often are carried in small crusts of mud and similar substances on the beaks and feet of birds, though they too accept the view that birds migrate on empty stomachs. It is unlikely, then, that any appreciable number of species have been carried internally by birds, but there must remain a doubt as to the value to be attributed to dispersal externally on feet and feathers.

It is fair to turn now to a consideration of the view that the main constituents of the heath-moor flora reached St Kilda over a pre-glacial land connection. Geologists are mainly in agreement that a Tertiary land, largely covered with basaltic flows, occupied the district from Northern Ireland to Scotland and Iceland, and though there is a range of opinion when most of this foundered, with the working hypothesis here postulated it is not necessary to suppose its continuance into post-glacial times. If then St Kilda remained in contact with Scotland or the larger Hebridean islands till Pliocene times our view is considerably strengthened. I have found no published geological evidence against this being possible. That the main fracturing and foundering of the North Atlantic continent occurred before the Ice Age seems certain because, as I have seen in Iceland and the Faeroes, the glaciation around these islands is outwards from the centre to the sea in all directions. Yet there is also some evidence that the fracturing and foundering stretched through an enormous period of time from the Miocene into the Pliocene [see Cole, The Growth of Europe, pp. 51 seq. (1914)]. So much for the geological evidence.

The hypothesis suggested here is based mainly upon a consideration of the total floristic composition of the heath-moor flora. It is not denied that wind and birds could introduce new plants but it seems unlikely that such a selection would have been made by these agencies. As the list proves, the flora is a typical piece of Scottish "moor" ecologically varying from heath to moor in the strict sense. Many exactly similar communities occur in the western Highlands and islands and suggest that botanically St Kilda is merely a detached portion of Scotland. If this is not actually so it is difficult to understand the absence of examples of discontinuity in distribution in St Kilda. Moreover, certain species occur which are not recorded from the Faeroes, basing this statement on Ostenfeld's revised list (Botany of the Faeroes, pp. 896 seq.). Thus *Hydrocotyle vulgaris*, *Taraxacum paludosum*, *Pedicularis silvatica*, *Schoenus nigricans*, *Rumex Acetosella*, *Salix repens*, *Aira praecox*, *Ophioglossum vulgatum*, and *Eupteris aquilina* occur in St Kilda and Western Scotland but are absent from the Faeroes. There is nothing in the flora to connect especially St Kilda with Greenland, the Faeroes, or Iceland. The floristic and ecological affinity is most strongly with those parts of Western Scotland with an acid terrain. The absence of certain genera and species also speaks for the same view since the rich Alpine-Arctic flora of the Scotch mountains predominates only where calcareous rocks outcrop [see Patton, Rep. Bot. Soc. and Exch. Club 1922, 797 (1923)]. It is this which possibly helps to explain the absence from St Kilda of species of *Saxifraga* (other than *S. oppositifolia*), *Dryas*, *Hieracium*, and many other plants.

The life-forms agree with the climatic and edaphic conditions. Thus in the heath-moor vegetation we find: 2 nanophanerophytes, 9 chamaephytes (several of them dominants), 40 hemicryptophytes, 10 geophytes, and only 5 therophytes. Wind and birds would be likely to introduce a higher number of therophytes, though it might be argued that these could not establish themselves.

The absence of endemics need some explanation. St Kilda is limited in size, in range of habitats, and in the composition of its flora, while it, in common with all north-western Europe, has suffered great climatic changes in late Tertiary and Quarternary times. All of these facts are against the existence of endemics, which are of two possible kinds—relict and novitate species. There is, in our view, no reason why relict species should be endemic in St Kilda, since they should rather be found also in Scotland at least. Novitate species occur especially where ecological conditions are varied but have had a long period of continuity, and where genera with numerous species occur. In these we find St Kilda also at a disadvantage.

To sum up we may suggest, in a very tentative manner, that the heath-moor flora of St Kilda is much as it was in late Pliocene times, that it survived the Ice Age *in situ*, and that it is actually a detached piece of West Scottish vegetation.

In conclusion, my best thanks are due to my friends H. K. A. Shaw and C. E. Hubbard for assistance in determining some of the plants in the above list, and to J. Gladstone for much valuable information as well as for the collection on which this paper is mainly based.

Kew, November 1927.

ADVENTIVE FLORA OF THE METROPOLITAN AREA. (I.)

RECENT ADVENTIVES ON LONDON RUBBISH.

By R. Melville and R. L. Smith.

From time to time lists of adventive plants found in the London district have been compiled and published, but no serious study of the foreign plants to be found growing on waste ground near London seems to have been made. Three years ago the writers took upon themselves the interesting task of exploring all the likely spots they could discover and making a note of all the adventive plants they saw. This paper records the results of their observations.

It was soon realised that the various rubbish dumps of the L.C.C. were the most fruitful spots to explore and, accordingly, interest was centred around them. Large quantities of household and general rubbish are taken down the Thames in barges to be tipped on the low lying ground between Barking and Tilbury and smaller quantities are taken along the Grand Junction Canal and tipped near Yiewsley. Although these tips are all of a similar type and, broadly speaking, have almost identical floras, a short account of five of them will not be out of place.

DAGENHAM, ESSEX.

This is by far the largest strip of waste ground that has been explored. It is at least a square mile in area and extends along the low lying ground on the north bank of the Thames between Dagenham Dock and a point opposite Rainham. London rubbish has been tipped here for many years, and most of the ground is now too overgrown with vigorous native plants to allow other than a few of the more hardy of the adventives to persist. Nevertheless several of these adventives have thoroughly established themselves on the old part of the tip. Of these the most prominent are *Heracleum Mantegazzianum*, *Rumex Patientia*, and *Bunias orientalis*. The two former are growing together and form a veritable forest of vegetation over eight feet high that must be seen to be appreciated. The ground that this " forest " stands on has been acquired by a commercial firm and will probably soon be cleared and levelled. *Solanum nigrum* is the dominant plant over quite large areas on some of the newer parts of the tips, where it forms a dense undergrowth. Other parts are covered with a tangle of Chenopodiums among which the various forms of *Chenopodium rubrum* are the most frequent. About one hundred and seventy adventives have been found in this locality including fifty-six not observed on the other hunting grounds.

GRAYS, ESSEX.

About a mile to the east of Grays on the bank of the Thames is another L.C.C. rubbish tip about a quarter of a square mile in extent. In this locality *Erigeron canadensis* and *Rapistrum rugosum* have made themselves at home and are quite established, as is also a small patch of *Onopordon acanthium*. About sixty-five adventives have been gathered on this dump including nine that have not been seen elsewhere in the district.

TILBURY, ESSEX.

The waste ground in the vicinity of Tilbury Docks has long been recognised as a source of alien plants, but when visited in 1926 it was not very promising. The dock area has recently been enlarged and much new material, which may be productive later, has been tipped. About a dozen plants only have been included in the list from this locality.

YIEWSLEY, MIDDLESEX.

The waste ground near Yiewsley, which is an old hunting ground of Dr Druce's, consists of several rather small areas on either bank of the Grand Junction Canal just within the Middlesex boundary. It has proved most interesting on account of the large number of species to be seen within a small area. *Acorus Calamus* grows along the canal-bank, and *Impatiens biflora* is of frequent occurrence in the neighbouring streams and ditches together with an occasional plant of *Impatiens glandulifera*. On the waste ground itself *Chenopodium rubrum* is very common together with other Chenopodiums and *Solanum nigrum*. A large variety of cereals has been found here and these may be classed as chicken-food aliens. A total of 118 species has been found in this locality, including 34 not gathered elsewhere.

HACKNEY MARSH, MIDDLESEX.

On both sides of the river Lea about a mile to the east of Homerton are several small rubbish dumps. Nearly the whole of this ground lies within the Middlesex boundary, but a small portion is in Essex. A variety of adventives occurs here, but no one plant is dominant over an area of any size. *Acorus Calamus* and *Archangelica officinalis* are established on the river bank. In this neighbourhood seventy-three species have been gathered, including nineteen new additions.

In making a study of adventive plants, many difficulties arise which are not encountered when one is working on the native flora. There is every chance of finding a native plant that may be known to grow in a certain locality, but the enthusiastic searcher after adventive plants has to make light of many an inconvenience and disappointment.

For instance, if one's nose and ears are at all sensitive, the former is sure to be displeased with the multifarious odours that are ever present, while the latter will be plagued with the chirping of the millions of crickets that make their home on these tips. Another frequent source of annoyance is the presence of hosts of gnats and mosquitos all "out for blood."

Then again, one may go out of a week-end and, among other finds, see a strange plant not yet in flower. Rough bearings are taken and a note made to visit the spot a week or so later, but when the next visit is made, one is very fortunate if the plant in question can be gathered. It is no uncommon experience to find that the spot where the plant was growing has been freshly tipped and the plant obliterated. However, there is an even more exasperating possibility. Vegetation grows very quickly on these heaps and instead of returning to a few scattered plants with our "stranger" easily discernible amongst them, we are confronted with a veritable forest of plants and, search how we will, our quarry eludes us and we are forced to regard it as an unsolved mystery. Thus our notebooks are strewn with interrogation marks that will never be cancelled and, indeed, one can never be sure of a specimen until it is safely in the drying press.

But this is not the end of our troubles. The identification of an adventive plant, owing to the lack of any knowledge of its native country, is often a matter of some difficulty. As a rough estimate, fifty per cent. of our adventives are to be found in countries bordering on the Mediterranean Sea, which makes it possible to identify a fair proportion with the aid of a good French or Italian flora. North American plants come next in point of numbers and the remainder from all parts of the world, but of these a number are garden outcasts or plants having some economic use.

In spite of its drawbacks the writers prefer this kind of field work to the more conventional form and have had many enjoyable excursions over rubbish heaps. It offers the charm of uncertainty—one can never tell what one may find next.

When visiting a rubbish dump in search of adventive plants, it is advisable to seek the ground that has been tipped upon recently, but not too recently. Experience has shown that the rubbish tipped during the autumn and winter of one year will, if left undisturbed, produce quite a crop of plants by the late summer of the following year. This does not mean that the late summer is the only time that these plants are worth seeking. Far from it—there is always something fresh and interesting to be seen from early May to mid-October, but late August is perhaps the best time, at all events, for a single visit.

This list includes approximately two hundred and fifty plants, which have been arranged according to the second edition of Dr Druce's "British Plant List," to which the numbers refer. No species has been included unless its identity has been established with reasonable certainty. In this connection our cordial thanks are offered to Dr Druce, Dr Thellung, and the staffs of the British Museum (Botanical Dept.) and the Kew Herbarium for their help.

No claim of finality is made for this paper, for such a state is obviously unattainable in any survey of adventive plants. It is probable that during the next few years sufficient material will accumulate to warrant the writing of a supplement to this, shall we say, tentative List of London's Adventive Plants.

13/3. Delphinium Ajacis L. Europe. Hackney Marshes; Yiewsley; flore pleno alba, Dagenham. Probably the garden annual in each case.

21/1. Papaver somniferum L. Orient. Dagenham; Yiewsley. Opium Poppy.

21/6. P. hybridum L. Europe; N. Africa. Dagenham.

28/1. Eschscholzia Douglasii Walp. California. Dagenham. Californian Poppy.

33/4. Mathiola bicornis DC. Eastern Europe. Dagenham. Night-scented Stock.

42/10. Alyssum maritimum Lam. Europe. Dagenham; Yiewsley. Sweet Alyssum.

45/1. Cochlearia Armoracia L. Europe. Dagenham; Grays; Yiewsley; Hackney Marshes. Horseradish.

48/1. Wilckia maritima Scop. Europe. Dagenham; Yiewsley. Virginian Stock.

49/2. Sisymbrium Sophia L. Europe. Dagenham; Yiewsley.

49/3. S. altissimum L. Europe. Dagenham; Grays; Yiewsley; Tilbury.

49/4. S. orientale L. Europe. Dagenham; Grays; Yiewsley.

49/6. S. officinale Scop., var. leiocarpum DC. Europe. Yiewsley.

49/11. S. pyrenaicum Vill. Europe. Dagenham.

49/13. S. Loeselii L. Europe. Dagenham.

50/1. Erysimum Cheiranthoides L. Europe. Dagenham; Yiewsley; Hackney Marshes.

52/1. Camelina sativa Crantz. Europe. Dagenham; Hackney Marshes.

54/2. Brassica Napus L. Dagenham; Yiewsley.

54/3. B. Napo-brassica Mill. Dagenham; Grays; Yiewsley. Swede Turnip.

54/4. B. Rapa L. Dagenham; Yiewsley. Turnip.

54/15. B. alba Boiss. Europe. Dagenham; Yiewsley; Hackney Marshes.

54/16. B. juncea Coss. Asia. Dagenham; Yiewsley; Hackney Marshes.
55/1. Diplotaxis tenuifolia DC. Europe. Dagenham; Grays; Hackney Marshes.
55/2. D. muralis DC. Europe. Grays.
55/3. D. Erucoides DC. Europe. Dagenham; Hackney Marshes.
56/2. Eruca Eruca (L.). Europe. Dagenham.
61/1. Lepidium graminifolium L. Europe. Dagenham.
61/3. L. Draba L. Europe. Dagenham; Yiewsley; Grays; Tilbury.
61/4. L. ruderale L. Europe.. Dagenham; Yiewsley; Grays; Tilbury.
61/12. L. sativum L. Orient. Dagenham; Yiewsley; Hackney Marshes.
61/20. L. virginicum L. N. America. Yiewsley.
64/1. Thlaspi arvense L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.
65/2. Iberis umbellata L. Europe. Dagenham.
70/1. Vogelia paniculata Hornem. Europe. Dagenham; Hackney Marshes.
72/1. Myagrum perfoliatum L. Europe. Hackney Marshes.
74/2. Bunias orientalis L. Europe. Dagenham; Grays.
76/2. Rapistrum orientale DC. Greece. Dagenham; Grays.
78/1. Enarthrocarpus lyratus DC. Greece. Hackney Marshes.
80/4. Raphanus sativus L. Orient. Dagenham; Yiewsley; Grays; Tilbury; Hackney Marshes.
84/1. Gynandropsis pentaphylla DC. Africa; S. America. Dagenham. A curious but uncommon garden annual.
85/8. Reseda odorata L. Egypt. Dagenham; Yiewsley. Mignonette.
92/8. Dianthus Caryophyllus L. Europe. Dagenham.
95/2. Saponaria Vaccaria L. Europe. Dagenham; Yiewsley.
96/4. Silene noctiflora L. Europe. Hackney Marshes.
96/5. S. anglica L. Europe. Hackney Marshes.
96/16. S. dichotoma Ehrh. Europe. Grays.
98/9. Lychnis Githago Scop. Europe. Yiewsley.
115/3. Althaea rosea L. Europe. Dagenham; Hackney Marshes. Hollyhock.
117/6. Malva ambigua Guss. S. Europe. Dagenham.
117/9. M. parviflora, var. microcarpa (Desf.) F. & P. Europe. Hackney Marshes.
125/4. Linum usitatissimum L. Cult. Dagenham; Yiewsley; Hackney Marshes. Flax.
127/27. Geranium sibiricum L. Asia. Dagenham. Naturalised in N. America.
130/1. Tropaeolum peregrinum L. Peru. Dagenham.
130/2. T. majus L. Peru. Dagenham; Yiewsley.
133/2. Impatiens biflora Walt. America. Yiewsley. Frequent in Surrey.
133/4. I. glandulifera Royle. Himalayas. West Drayton.
140/1. Vitis vinifera L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes. Vine.

140/2. V. hederacea L. (Ampelopsis quinquefolia Michx.). N. America. Yiewsley; Dagenham.

140/3. V. Thunbergii (S. & Z.) Dr. (Ampelopsis Veitchii Hort.). N. America. Yiewsley; Dagenham.

153/1. Medicago falcata L. × M. sativa L. Europe. Dagenham.

153/3. M. sativa L. Europe. Dagenham; Yiewsley; Grays. Lucerne.

153/4. M. denticulata Willd. Europe. Hackney Marshes.

153/4. M. hispida Gaertn., var. confinis Burnat. Europe. Hackney Marshes.

153/5. M. arabica Huds. Europe. Hackney Marshes; Yiewsley.

154/1. Melilotus altissima Thuill. (officinalis Lam.). Europe. Dagenham.

154/2. M. alba Desr. Europe. Dagenham; Hackney Marshes.

154/4. M. indica All. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.

155/4. Trifolium incarnatum L. Europe. Dagenham.

155/15. T. hybridum L. Europe. Dagenham; Yiewsley.
Var. elegans (Savi). Europe. Dagenham.

160/11. Lotus Ornithopodioides L. South Europe. Dagenham.

163/1. Galega officinalis L. Europe. Dagenham; Grays.

165/1. Colutea arborescens L. Orient. Dagenham; Grays; Tilbury. Common by the District Railway near Barking.

170/1. Coronilla varia L. Europe. Dagenham.

175/1. Cicer arietinum L. Orient. Dagenham. Chick Pea. Introduced with chicken-food.

176/5. Vicia villosa Roth. Europe. Yiewsley.

176/6. V. dasycarpa Ten. Europe. Hackney Marshes.

176/12. V. sativa L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.

176/16. V. benghalensis L. Europe. Yiewsley.

176/24. V. Faba L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.

176/26. V. pannonica Cr., b. stricta M. Bieb. Europe. Dagenham.

176/31. V. peregrina L. Europe. Dagenham; Hackney Marshes.

178/23. Lathyrus odoratus L. Europe. Dagenham; Yiewsley.

180/1. Pisum arvense L. Europe. Dagenham; Yiewsley; Hackney Marshes.

180/5. P. sativum L. Europe. Dagenham; Yiewsley.

189/11. Potentilla norvegica L. Europe. Dagenham; Hackney Marshes.

219/2. Lythrum Hyssopifolia L. Europe. Yiewsley.

223/1. Oenothera biennis L. N. America. Dagenham; Grays; Yiewsley.

223/2. Oe. grandiflora Ait. (Lamarkiana De Vries). N. America. Yiewsley.

223/8. Oe. argentina Lévl. & Thell., var. longipila Kloos & Thell. S. America. Dagenham.

228/1. Lagenaria Lagenaria (L.) Dr. (vulgaris Ser.). Tropics. Dagenham. Common Gourd.

230/1. Citrullus Citrullus (L.) Dr. Tropical Africa. Dagenham. Water Melon.

231/3. Cucumis Melo L. Asia. Yiewsley.

231/4. C. maxima Duch. West Indies. Yiewsley.

231(2)/1. Cucurbita Pepo L. Asia. Dagenham; Yiewsley; Grays.

250/1. Carum Carvi L. Europe. Dagenham; Hackney Marshes. Caraway.

250/3. C. Petroselinum B. & H. Cult. Dagenham; Yiewsley. Parsley.

275/1. Archangelica Archangelica (L.) Karst. (officinalis Hoffm.). Europe. Hackney Marshes. Naturalised on the banks of the River Lea.

276/4. Peucedanum graveolens (L.). Europe. Dagenham. Dill.

277/1. Heracleum Mantegazzianum Somm. and Levier. Caucasus. Dagenham; Yiewsley. See accompanying plate.

279/1. Coriandrum sativum L. Europe. Dagenham; Yiewsley; Hackney Marshes. Coriander.

287/3. Sambucus Ebulus L. Europe. Tilbury.

296/10. Galium tricorne Stokes. Europe. Yiewsley; Hackney Marshes.

306/3. Dipsacus sativus (L.). Europe. Dagenham; Yiewsley. Previously recorded in the latter locality, but newly introduced.

312/6. Solidago canadensis L. N. America. Dagenham; Temple Fortune.

318/4. Aster novi-belgii L. N. America. Yiewsley.

318/13. A. novae-angliae L. N. America. Yiewsley.

320/3. Erigeron canadensis L. N. America. Dagenham; Yiewsley; Grays.

339/4. Ambrosia trifida L. N. America. Dagenham. This plant has persisted for three years.

341/3. Xanthium spinosum L. Cosmopolitan. Dagenham; Hackney Marshes.

347/4. Helianthus annuus L. N. America. Dagenham; Yiewsley; Grays; Hackney Marshes. Sunflower.

347/8. H. laetiflorus Pers. N. America. Yiewsley.

347/12. H. tuberosus L. N. America. Yiewsley. Jerusalem Artichoke.

347/13. H. diffusus Sims (H. scaberrimus Ell.). N. America. Dagenham; Yiewsley; Grays.

351/1. Guizotia abyssinica Cass. Africa; India. Dagenham; Hackney Marshes. This plant is cultivated in India for its seeds, which yield a bland oil similar to Sesame. A frequent alien.

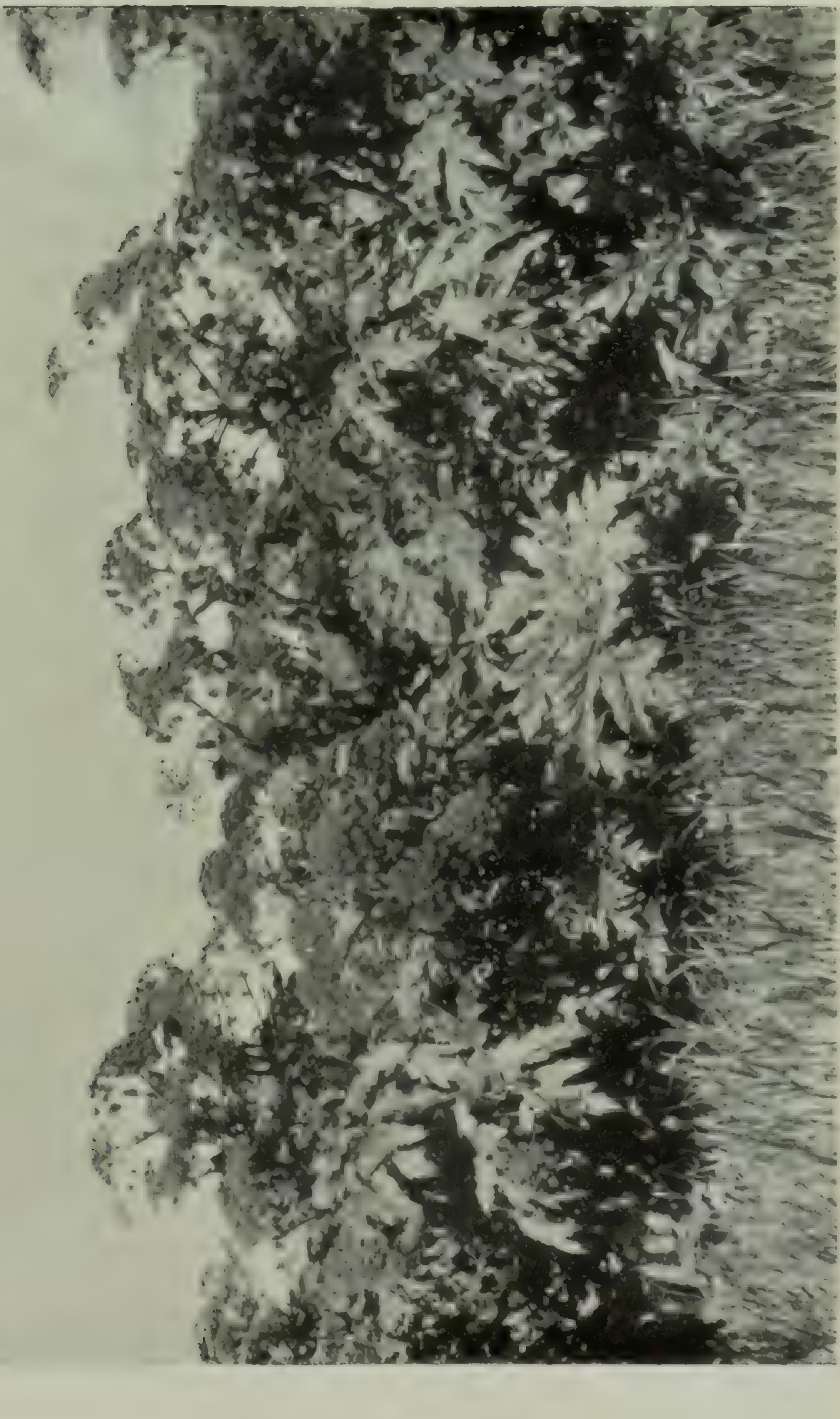
354/1. Galinsoga parviflora Cav. America. Dagenham; Hackney Marshes.

362/2. Tagetes minuta L. Dagenham; Hackney Marshes.

364/2. Anacyclus radiatus Lois., var. pallescens. Europe. Dagenham.

370/1. Chrysanthemum segetum L. Europe. Dagenham.

370/3. C. morifolium Rau (sinense Sabini). Hortal. Yiewsley.



HERACLEUM MANTEGAZZIANUM Somm. & Levier.

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370/13. C. Parthenium Bernh. Europe. Hackney Marshes.
371/3. Matricaria suaveolens Buch. N. America. Dagenham; Yiewsley; Grays; Hackney Marshes.
371/9. M. globifera Fenzl. S. Africa. Dagenham.
378/1. Artemisia Absinthium L. Europe. Dagenham.
378/8. A. Abrotanum L. Spain. Yiewsley. Southernwood.
378/15. A. annua L. Orient. Yiewsley.
383/7. Senecio squalidus L. Europe. Dagenham; Yiewsley; Hackney Marshes.
383/8. S. viscosus L. Europe. Dagenham; Grays; Yiewsley.
385/1. Calendula officinalis L. Europe. Dagenham; Yiewsley; Grays. Marigold.
395/3. Carduus pycnocephalus L. Europe. Hackney Marshes.
397/1. Onopordon Acanthium L. Europe. Grays.
398/1. Cynara Cardunculus L. Europe. Dagenham; Hackney Marshes. Globe Artichoke.
399/1. Mariana Mariana Hill. (lactea). Europe. Dagenham; Hackney Marshes.
405/12. Centaurea Cyanus L. Europe. Dagenham; Yiewsley; Grays. Cornflower.
405/31. C. Solstitialis L. Europe. Dagenham.
405/32. C. melitensis L. Europe. Dagenham; Yiewsley; Hackney Marshes.
407/3. Carthamus tinctorius L. Africa. Dagenham; Yiewsley; Grays; Hackney Marshes.
Var. inermis Schweinf. Yiewsley.
409/1. Cichorium Intybus L. Europe. Dagenham; Grays. Chicory.
409/2. C. Endivia L. Europe. Dagenham; Yiewsley; Grays. Endive.
415/2. Picris Hieracioides L. Europe. Dagenham; Grays; Tilbury.
416/10. Crepis taraxacifolia Thuill. Europe. Dagenham; Yiewsley.
425/1. Lactuca virosa L., type and var. indivisa. Europe. Dagenham; Yiewsley; Grays; Tilbury.
425/. L. sativa. Dagenham; Yiewsley. Lettuce.
425/8. L. macrophylla A. Gray. Europe. Temple Fortune.
463/3. Lysimachia punctata L. Europe. Yiewsley.
467/3. Anagallis foemina Mill. Europe. Dagenham.
473/1. Vinca major L. Europe. Yiewsley.
474/2. Buddleia Davidii Franch. China. Yiewsley.
493/2. Lappula Lappula (L.). Europe; Orient. Dagenham; Yiewsley.
507/3. Lithospermum arvense L. Europe. Dagenham; Hackney Marshes.
516/1. Lycopersicon Lycopersicum (L.) (esculentum Hill). America. Dagenham; Yiewsley; Grays; Hackney Marshes. Tomato.
517/2. Solanum nigrum L. Hackney Marshes; Yiewsley; Dagenham; Grays.
Var. atriplicifolium Coult. Hackney Marshes.
517/16. S. ciliatum Lam. S. America. Dagenham; Yiewsley.
517/17. S. Sarrachoides Sendtn. Central America. Dagenham.

518/7. Physalis peruviana L. S. America. Dagenham; Yiewsley; Grays; Hackney Marshes.
520/1. Lycium chinense Mill. China. Dagenham; Tilbury.
521/1. Atropa Belladonna L. Europe. Dagenham. Quite naturalised.
522/1. Datura Stramonium L. Europe. Dagenham; Hackney Marshes. Thorn Apple.
524/1. Hyoscyamus niger L. Europe. Dagenham; Hackney Marshes. Henbane.
524/4. H. muticus L. Egypt. Dagenham.
525/1. Nicotiana rustica L. Mexico. Dagenham.
525/3. N. Tabacum L. America. Grays; Yiewsley.
525/5. N. alata Link & Otto, var. grandiflora Comes (affinis T. Moore). Hortal. Dagenham; Yiewsley; Grays.
527/1. Verbascum Phlomoides L. Europe. Dagenham.
534/1. Antirrhinum majus L. Europe. Dagenham; Yiewsley.
537/1. Mimulus guttatus DC. N. America. West Drayton.
543/1. Veronica spicata L. Europe. Yiewsley.
556/7. Verbena Teucrioides Gill. & Hook. Dagenham.
556(2)/1. Ocimum micranthum Willd. Tropical America. Dagenham. Basil.
560/2. Origanum Onites L. Europe. Dagenham.
566/17. Salvia verticillata L. Europe. Dagenham.
569/1. Nepeta Cataria L. Europe. Grays.
570/3. Dracocephalum parviflorum Nutt. N. America. Dagenham.
577/7. Stachys annua L. Europe. Hackney Marshes.
577/9. S. salicifolia Ten. (italica auct.). Europe. Dagenham.
588/1. Plantago indica L. Europe; Asia Minor. Grays.
596/1. Amaranthus caudatus L. Orient. Yiewsley.
596/4. A. chlorostachys Willd. Europe. Yiewsley.
Var. aristulata Thell. Dagenham.
596/9. A. albus L. N. America. Dagenham; Grays.
600/6. Chenopodium murale. L. Europe. Dagenham.
600/7. C. opulifolium Schrad. Europe. Dagenham; Grays.
600/8. C. album L., var. viride L. Europe. Yiewsley.
Var. viridescens St Am. Europe. Yiewsley.
Var. subficifolium Murr, forma microphyllum. Hackney Marshes.
Var. lanceolatiforme Murr. Yiewsley.
600/11. C. leptophyllum Nutt. N. America. Yiewsley.
600/12. C. ficifolium Sm. Europe. Dagenham; Yiewsley.
600/15. C. polyspermum L. Europe. Dagenham; Yiewsley; Hackney Marshes.
600/16. C. Ambrosioides L. Europe. Hackney Marshes.
604/2. Beta vulgaris L. Cult. Dagenham; Yiewsley. Beetroot.
605/1. Spinacia oleracea L. Cult. Dagenham; Yiewsley. Spinach.
606/10. Atriplex hortensis L. Asia. Yiewsley.
606/11. A. tatarica L. Europe. Yiewsley; Hackney Marshes.

607/1. Axyris Amarantoides L. N. Asia. Dagenham.

610/1. Kochia scoparia Schrad. Europe. Dagenham. Summer Cypress.

613/1. Salsola Kali L., var. tenuifolia Tausch. Dagenham; Grays.

615/32. Polygonum cuspidatum Sieb. & Zucc. Japan. Dagenham; Yiewsley; Grays; Tilbury; Hackney Marshes.

616/1. Fagopyrum Fagopyrum (L.) (sagittatum Gilib.). Europe. Dagenham; Grays; Hackney Marshes. Buckwheat.

616/2. F. tataricum (L.) Gaertn. N. America. Yiewsley; Dagenham.

618/12. Rumex palustris Sm. Europe. Grays.

618/19. R. salicifolius Weinm. N. America. Dagenham; Grays.

618/20. R. Patientia L. Europe. Dagenham.

618/29. R. obovatus Danser. S. America. Hackney Marshes.

628/9. Euphorbia virgata W. & K. Europe. Dagenham; Grays; Tilbury.

630/1. Ricinus communis L. Tropics. Dagenham; Grays. Castor Oil Plant.

632/2. Mercurialis annua L. Europe. Dagenham; Yiewsley.

635/1. Cannabis sativa L. Central Asia. Dagenham; Yiewsley; Grays. Hemp.

647/1. Castanea Castanea (L.) Karst. (sativa Miller). Europe. Dagenham. Chestnut.

656/1. Elodea canadensis Michx. N. America. Dagenham; Yiewsley; Grays.

683/1. Tritonia crocosmiflora Nich. (Montbretia). Hortal. Iver; Dagenham.

717/3. Commelina nudiflora L. Tropics. Hackney Marshes.

720/1. Phoenix dactylifera L. N. Africa. Dagenham; Yiewsley; Grays. Date Palm.

721/1. Acorus Calamus L. Europe. Yiewsley; Hackney Marshes.

754/1. Panicum miliaceum L. Central Asia. Dagenham; Yiewsley; Grays; Hackney Marshes.

754/2. P. capillare L. N. America. Dagenham.

754/5. P. laevifolium Hack. Dagenham; Yiewsley; Grays.

754/8. P. Crus-galli L., var. longisetum Döll. Europe. Dagenham; Grays; Hackney Marshes.

754/9. P. frumentaceum (Link) (Echinochloa frumentacea Link). Africa; China. Yiewsley.

754/10. P. sanguinale L. Europe. Dagenham.

756/1. Setaria italica (L.) Beauv. Europe. Dagenham; Yiewsley; Grays.

756/2. S. viridis (L.) Beauv. Europe. Yiewsley; Dagenham.
Var. Weinmanni R. & S. Yiewsley.

756/3. S. glauca Beauv. Europe. Dagenham.

759/1. Zea Mays L. America. Dagenham; Yiewsley; Hackney Marshes. Maize.

763/1. Sorghum Sorghum (L.) Dr. (vulgare Pers.). Tropics. Dagenham.

765/5. Phalaris canariensis L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.

765/8. P. angusta Nees. N. America. Hackney Marshes.

766/2. Anthoxanthum aristatum Boiss. (Puelii Lec. & Lam.). America. Dagenham.

784/1. Gastridium ventricosum (Gouan) S. & T. Europe. Grays.

785/1. Apera Spica-venti (L.) Beauv. Europe. Dagenham; Yiewsley; Grays.

788/1. Lagurus ovatus L. Europe. Yiewsley.

794/7. Avena sativa L. Cult. Yiewsley; Dagenham; Grays.

808/1. Cynosurus echinatus L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.

809/6. Koeleria phleoides Pers. Europe. Grays.

815/6. Eragrostis pilosa Beauv. Tropics. Grays.

822/3. Briza maxima L. Europe. Yiewsley.

824/5. Poa palustris L. Europe. Dagenham.

827/2. Bromus rigidus Roth. S. Europe. Tilbury.

827/13. B. Unioloides H.B.K. America. Dagenham; Yiewsley; Grays; Hackney Marshes.

827/16. B. secalinus L. Europe. Dagenham; Yiewsley; Hackney Marshes.

829/2. Lolium temulentum L. Europe. Dagenham; Yiewsley; Hackney Marshes.

830/2. Agropyron pungens R. & S. Dagenham.

831/1. Secale cereale L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes. Rye.

832/4. Triticum aestivum L. (vulgare Host). Cult. Yiewsley; Dagenham, etc.

835/7. Hordeum jubatum L. N. America. Dagenham; Yiewsley; Hackney Marshes.

835/10. H. vulgare L. Cult. Yiewsley; Dagenham, etc.

835/11. H. hexastichon L. Cult. Hackney Marshes.

836/7. Elymus virginicus L. N. America. Dagenham.

MEETING OF SOME OF THE BOTANICAL SOCIETY OF THE BRITISH ISLES IN GLAMORGAN, 1927.

By E. VACHELL.

Thursday, June 9. After such a successful visit to Weston-super-Mare some anxiety was felt by the local field botanist in charge of the Cardiff expeditions as to whether Glamorgan could possibly supply as many rare plants as Somerset. If its ability to do so was to be proved, no time could be wasted. As soon, therefore, as possible after the short voyage across the Bristol Channel was safely accomplished, cars were requisitioned to take the party via Llandaff, where a short time was spent in visiting the cathedral, to Llanishen where on the banks of the Reath Park Brook *Aconitum anglicum* grows in considerable abundance. Near by, on the Rhymney Railway embankment, the silvery leaves of *Anaphalis margaritacea* were seen in profusion. This plant was first noticed in the Rhymney Valley by Lhwyd in 1724, and now covers slag heaps, waste ground and mountain scree, almost, in some places, to the exclusion of other species. When gathering specimens of this plant a fine colony of *Equisetum hyemale* was noticed in the vicinity. This is a new habitat for a species very scarce in Glamorgan.

Friday, June 10. Starting early from the Angel Hotel the party drove through Llantwit Major, the seat of a monastery founded by St Illtyd about the 5th century, past St Donat's Castle to Marcross Cwm. Twice the charabanc was brought to a standstill as the bright blue flowers of *Anchusa sempervirens* and attractive clumps of *Lathyrus latifolius* and *Asperula ciliata*, both relics of former cultivation, were passed. After a rough scramble over rocks and smooth round pebbles heaped up beneath the cliffs near Nash Point, *Mathiola incana* was seen in full bloom and *Brassica oleracea* one of the features of the Lias cliffs of Glamorgan. In the Cwm *Iris foetidissima*, *Campanula glomerata* and *Cnicus eriophorus* are plentiful and Dr Druce noticed the following varieties hitherto not recorded for the county:—*Crataegus monogyna*, var. *quercifolia*; *Sonchus asper*, var. *pungens*; *Sonchus oleraceus*, var. *lacerus*, and *Acer campestre*, var. *hebecarpa*. Driving through Southerndown, Dunraven Bay was next visited where, on dripping cliffs, *Adiantum Capillus-Veneris* was seen. Near the entrance to Dunraven Castle *Erodium maritimum*, *Sagina maritima* and *Ranunculus parviflorus* occur in some profusion. Dr Druce also noticed *Cnicus palustris*, var. *ferox*. The next stop showed *Cochlearia danica* and *Asperula cynanchica* on the Downs, *Inula Crithmoides* on cliffs by the sea, and *Asplenium marinum* in crevices of rock. After crossing the slippery stepping stones below the picturesque ruins of Ogmore Castle covered with *Cheiranthus Cheiri* the little party were rewarded by seeing *Hippuris vulgaris*, *Glaux maritima* and *Alopecurus geniculatus* while *Impatiens glandulifera* grew abundantly near by. A two minutes' halt at Shewell provided *Polygonum Bistorta* for one of the party and after half-an-hour's drive the charabanc drew up at the quaint old-world village of Aberthin where *Anthemis nobilis*, *Leonurus Cardiaca*, *Mentha piperita*, *M. Pulegium* and *Stachys ambigua* occur. At Hensol Castle an amusing contretemps occurred. The late owner had only just given up possession and the charabanc, arriving by the South Lodge instead of by the main entrance as the caretaker had expected, found the gates locked and the lodge empty. It gained an entrance into the Park by a steep narrow lane up which it was impossible to effect an exit backwards, only to find that after a drive of half a mile between Park railings a second gate was barred against it. To turn was impossible, and it was well that a hurried search round the Castle was successful and that caretaker and key were found to extricate the charabanc from its unenviable position. In Hensol lake grow *Elatine hexandra*, *Ceratophyllum demersum* and *Scirpus sylvaticus*. St Hilary was next visited where a warm welcome awaited the members and a delicious tea was provided by Sir Thomas and Lady Mansel Franklen. Then, after a delightful rest in the garden Cardiff was reached in time for dinner. Later in the evening, by kind invitation of Mr Hyde, Keeper of Botany, a private visit was paid to the National Museum of Wales where the various galleries were inspected and much interest was shown in the valuable collections of China, Pictures and Welsh by-gones and in the exhibits displayed in the Botanical Department.

Saturday, June 11. Swansea was reached by train and taxis were in readiness at the station to convey the party to the peninsula of Gower. A halt was called at Park Mill to enable the members to walk over the sandhills to Pennard Castle, a picturesque ruin situated on a limestone crag near the shore. *Helleborus foetidus* and *Poa pratensis*, var. *subcaerulea* were passed near the path and *Hutchinsia petraea* near the limestone rocks below the Castle. *Draba aizoides* occurs in fair quantity both on rocks bordering the steep incline leading up to the Castle and also on the ruined walls, but June is late for the Yellow Whitlow Grass and a prolonged search for a petal was made unsuccessfully, to satisfy the desire of one of the party to see it "in flower." The next stop was at Penmaen, near which, after a short walk, a picnic lunch was enjoyed on the steep grassy slopes overlooking Three Cliffs Bay, once the home of *Brassica monensis*. Here *Limonium binervosum*, *Euphorbia portlandica* and *Geranium sanguineum* are abundant and later in the year *Spiranthes autumnalis* appears amongst the short turf. After rejoining the cars the road through Penrice Castle grounds past the old station for *Hypericum calycinum* was taken to Oxwich Bay. Botanically speaking, this strip of country is exceedingly interesting and would have repaid a longer visit. *Typha angustifolia* and *Chara fragilis*, etc., were seen in the ponds, *Juncus acutus* in the slacks of the sandhills, and *Glaucium flavum* on the shingle, and after a hurried visit to Old Oxwich Church tea was found very acceptable in a cottage near the shore. The party was obliged to return to Cardiff by rather an early train, but between the station and their hotel *Cynodon Dactylon* was visited on the banks of the River Taff. In the evening Hon. Mrs Adeane, still undaunted, was shown *Saxifraga granulata* and *Lathraea Squamaria* by the writer when it was almost too dark to see them by the banks of the Taff River within the Castle grounds.

Sunday, June 12. After a hurried glimpse at the interesting Roman wall that has recently been excavated at Cardiff Castle an early start was made for Mynydd-y-Glu about 7 miles from Cardiff. *Arrhenatherum tuberosum* and *Polygonatum multiflorum* were gathered just as the charabanc drew up on the edge of the moor. Here by the shores of a small mountain lake occur *Drosera longifolia*, *D. rotundifolia*, *Pilularia globulifera*, *Hypericum elodes*, *Peplis Portula*, *Agrostis setacea*, *Narthecium ossifragum*, *Elatine hexandra*, *Scirpus fluitans*, *S. multicaulis*, *Radiola linoides*, *Potamogeton obtusifolius*, *Centunculus minimus*, *Apium inundatum*, *Potentella palustris*, *Nitella flexilis* and *Carex inflata*. Dr Druce recorded for the first time from this locality *Carex vesicaria* and the hybrid *C. vesicaria* × *inflata* = *C. involuta*. A further drive of about 20 miles brought the party to Kenfig Pool, a large stretch of fresh water situated amongst the sandhills, a well-known haunt of botanists, entomologists, ornithologists and archæologists. After a light lunch at the Inn where is kept a replica of the old town Mace, a relic of the time when Kenfig, now buried under the sand, was once a thriving borough that supplied two members to Parliament, the party visited the leaves of *Narcissus biflorus* which early in the year half covers an adjoining meadow, *Lamium amplexicaule*, *L. hybridum* and *Ballota nigra*, var. *mollissima*. The flora of Kenfig is exceptionally interesting but it was impossible to see during a short walk all the treasures that the district contains. The vivid colour of the marsh orchids attracted most attention, for *Orchis incarnata*, var. *dunense*, and *O. praetermissa* were in their full glory, while hundreds of buds of *Epipactis palustris* gave some indication of the magnificent display that was to come. On the shifting sand of the newer dunes occur *Cynoglossum officinale*, *Blackstonia perfoliata*, *Echium vulgare*, *Euphorbia portlandica*, *E. Paralias* and *Lycopsis arvensis*, while *Salix repens*, *Carex arenaria* and *Ammophila arenaria*, which by law was ordered to be planted by all the inhabitants of the borough before it was destroyed by the great sandstorm, still do their part to stay the onward rush of the sand. On the fixed dunes occur *Viola Curtisii*, var. *flavicornis*, *Polygala oxyptera*, *Saxifraga tridactylites*, *Erigeron canadense*, *Anagallis arvensis*, etc., etc. In the damp slacks between the sandhills, *Sagina nodosa*, *Erythraea Centaurium*, *E. pulchella*, *Samolus Valerandi*, *Ajuga reptans* with blue and white flowers, *Gentiana Amarella* with purple and mauve-pink flowers, and *Juncus acutus* are seen. In the waters of the lake itself grow *Nymphaea alba*, *Ranunculus peltatus* and *R. trichophyllus*, and around the sandy margins of the adjacent pools *Potamogeton heterophyllus*, *Alisma Ranunculoides*, *Apium inundatum*, *Scutellaria galericulata*, *Myosotis caespitosa*, *Hypericum elodes* and *Chara aspera*. One small pond surrounded by *Lysimachia vulgaris* and full of the pink spikes of *Polygonum amphibium* was a blaze of colour when seen against the blue background of a June sky. Miss Insole's Iris garden at The Court, Llandaff, was visited after a short wait at Cowbridge for tea, and towards evening the little party, under the leadership of Mr R. Smith, inspected the ballast heaps and allotments at Splott where many interesting grain aliens are to be seen. Great hopes were entertained that a plant of *Roemeria hybrida* would be visible and luckily these hopes were fulfilled. Many rare and interesting plants occur from time to time as adventive species. The following may usually be seen:—*Glaucium corniculatum*, *Sisymbrium Sophia*, *S. altissimum*, *S. orientale*, *Erysimum Cheiranthoides*, *Camelina sativa*, *Lepidium Draba*, *Bunias orientalis*, *Silene noctiflora*, *S. gallica*, *Malva pusilla*, *Melilotus indica*, *Trifolium resupinatum*, *Potentilla norvegica*, *Ammi majus*, *Anacyclus clavatus*, *A. radiatus*, *Anthemis arvensis*, *Anagallis foemina*, *Lappula echinata*, *Amaranthus retroflexus*, *Chenopodium murale*, *Panicum Crus-galli*, *Setaria viridis*, *Poa palustris*, *Hordeum jubatum*, *Phalaris canariensis*, *P. minor*, *P. paradoxa*, and on the marshes near by fine examples of *Glyceria rupestris*, etc., etc. By this time the remaining members of the Botanical Society were almost plant weary--note books and memories were full to overflowing for Glamorgan in its effort to rival Somerset had provided almost a surfeit of flowers, and the following morning the local field-botanist said goodbye to a somewhat jaded, but, she hopes, contented little party who took their places in the London train.

THE BOTANICAL EXCURSION IN SOMERSET AND GLAMORGAN.

By W. D. Miller.

A small party of botanists met at Weston-super-Mare on Whit Monday, June 6. On Tuesday, a start was made by car at 9.30, the route being across the flat ground north of the Mendips and gradually ascending to within 200 ft. of the top of Blackdown, the highest point of these hills (1060 ft.). The first stop was made at Tynings Farm where, in short mowing grass, *Vicia Orobus* was in good flower with *Ophioglossum*, *Habenaria viridis* and other Orchids. A little further on some old lead workings provided *Thlaspi alpestre* and *Carex montana*. Thence down Cheddar Gorge where, among many plants noticed, were *Saxifraga hypnoides*, *Meconopsis cambrica*, *Polypodium calcareum*, *Cystopteris fragilis*, *Sedum rupestre*, *Galium sylvestre*, *Hieracium lima*, *Geranium sanguineum*, *Dianthus caesius*, *Thalictrum minus*, and *Cardamine impatiens*. After lunch—including the strawberries for whose culture Cheddar is celebrated—the return journey was made along the southern side of the Mendips, stopping near Axbridge to visit *Carex depauperata* and *Lithospermum purpureo-caeruleum*, and later at Purn Hill, where the white rock-rose, *Helianthemum polifolium*, was in good flower, with the hybrid pale lemon-yellow form. Other plants were *Marrubium vulgare*, *Trinia glabra*, *Rhamnus catharticus*, *Cerastium pumilum*, *Koeleria vallesiana*, *Polygala oxyptera*, and many others. Weston was reached in time for a late tea.

On Wednesday, June 8, an expedition was made to the peat moors. This is an extensive area of low-lying ground, some 7 miles long by 2 miles wide, where there is little cultivation. Some of the ground is used for grazing, but it is mostly old or recent peat cuttings and is largely occupied by marshy ground with much scrub birch, alder and Myrica, intersected everywhere by rhines, and peat bogs. The flora is remarkable throughout. On this occasion only a small area came under observation, and the flora was backward. Among plants noticed were *Hottonia palustris*, *Rumex maritimus*, *Thalictrum flavum*, *Potentilla palustris*, *Radiola Millegrana*, *Sparganium minimum*, *Sium latifolium*, *Peucedanum palustre*, *Habenaria viridis*, *Osmunda regalis*, *Aspidium Thelypteris*, *Utricularia vulgaris*, *Apium inundatum*, and many sedges, including *C. Pseudo-cyperus*, *C. teretiuscula* and *C. filiformis*. The majority of these were not yet mature.

Thence the route lay along the Polden hills, a narrow hogsback raised some 250 ft. above the levels and commanding wide views over the peat moor on the right as far as the Mendip hills, and on the left over Sedgemoor to the Quantocks and the Blackdown hills, while in front stretched the Bristol Channel with Steep Holm standing out prominently, and the Welsh coast and Glamorganshire hills filling in the background. Reaching Burnham a rough piece of ground south of the town was examined, which yielded *Caucalis Daucoides*, *C. latifolia*, *Sisymbrium Sophia*, *Galium tricorne*, and a little further on, *Trifolium maritimum*. *Elymus arenarius* was gathered on the sandhills. The party then had tea with Mr and Miss Miller and examined a small rockery where many rare British plants were to be seen. Afterwards a visit was paid to the golf links. Among plants noted were *Trigonella purpurascens*, *Orchis hircina* (in bud), *Oenothera odorata*, *Hippophae Rhamnoides* and *Festuca uniglumis*. On the way back to Weston *Cirsium Marianum*, *Onopordon Acanthium* and *Lepidium latifolium* were seen.

Owing to the early date of the meeting many of the interesting species encountered were not yet in flower but, aided by almost perfect weather and boundless enthusiasm, the members of the party were determined to enjoy themselves and undoubtedly succeeded in doing so though the absence of Dr Druce on the Wednesday was continually deplored.

SAGINA REUTERI Boiss.

By W. H. Pearsall.

For many years we have heard little of *S. Reuteri*, but recently Dr Druce sent me a specimen from Burnham, Somerset—" Leg. W. D. Miller, May 1927 " which must unquestionably be referred to this species as we at present understand it. The occasion seems opportune for more clearly defining the distinctive characters of the species and also for making some attempt to indicate its comital distribution here.

Boissier's original description (Diagn. Plant. Or. Nov. ser. ii., fasc. i., p. 82) differs slightly from that ex Willkomm, given in Rep. B.E.C. 1892, 359, but one of the differences is very important. The original description gives the peduncles as being "*glanduloso-hirtis*;" Willkomm omits this important character, but stresses the fact that the flowers are " shortly pedunculate." Both agree that the peduncles are "much longer than the calyx." When we remember that the whole plant is dwarf (*pygmaea*), and the calyx normally less than 2 mm. in length, we may well infer that the peduncles will be 3-4 mm. in length, at least. This is evidently the view of the writer of the description in the Camb. Fl. (iii., 31, 1920) who gives " pedicels very short, up to about 3 or 4 mm." A very considerable proportion of our British examples would come within even this narrow limit, but the examination of a very large number of such specimens in public and private herbaria justifies me in suggesting 6 mm. (or ¼ in.) as the maximum length of peduncle we should admit. While quite aware of the absurdity of apparently attempting to limit the operations of Nature in this manner—by giving measurements in mm.—I also recognise how very helpful actual measurements are to students in the field, and how much they are appreciated (cf. Hooker's Stud. Fl.). Without some definite unit or standard of comparison, relative terms like " small, short, etc.," are vague and unsatisfactory. We are justified in insisting that examples of *S. Reuteri* must possess very short (3-6 mm.) peduncles—using this original term throughout.

Further, it is quite clear from the original description that these very short peduncles must be glandular-hairy. F. N. Williams (Rep. B.E.C. 1917, 195) is correct in describing them as " *plerumque dense glandulosi*." This character is extremely important in view of the fact that the whole plant is always described as being " *parce glanduloso-puberula*." British examples usually have the peduncles ± densely glandular. Singularly enough the sepals are described—both by Boissier and Willkomm—as being glabrous, but ours are normally glandular, although often much less so than the peduncles. Possibly the most important character of this species is its dwarf, much branched and congested habit—which usually at once distinguishes it from *S. apetala*. We have, therefore, 4 distinctive characters marking off this species from others of the same genus :—

I. Very small size (*pygmaea*: *nana*: stems rarely exceeding 1 in.).
II. Much branched, congested habit.
III. Very short peduncles (not exceeding ¼in.).
IV. Peds. and seps. ± densely glandular.

When we come to determine the distribution of the species we are faced by considerable difficulty, as the plant was first recorded—on walls near Gt. Malvern Railway Station—35 years ago (Rep. B.E.C. 1892, 358) and has been distributed very seldom during the last 20 years. The best examples I have examined are in the herbaria of Mr A. Bennett, the Cambridge University, Dr G. C. Druce, and the Rev. E. F. Linton, and I am grateful for the facilities so readily afforded in each case.

Published accounts of the distribution of *S. Reuteri* are extremely unreliable. The Camb. Fl. (iii., 31, 1920) gives a brief but admirable description of the species, and adds a list of 11 counties from which the plant has been recorded, qualified by the words "but we do not venture to vouch for the correctness of this distribution." This is not very helpful to the serious student and the list might with advantage have been omitted. The London Catalogue (ed. 11) is certainly nearer the mark in giving 6 (?) as the probable number of counties. As some slight contribution to our knowledge of the distribution of the species, I submit a list of those examples which have passed through my hands and possess the four characters outlined above.

WORCESTERSHIRE. GREAT MALVERN Railway Station, collected by J. H. A. Steuart, 8/8/92 and 21/8/92; R. J. Towndrow, 8/6/93; G. C. Druce, 1893; R. F. Towndrow, 16/7/96 (mixed); C. E. Palmer, 17/6/96 (mixed); A. J. Crosfield, June 1896; R. F. Towndrow, 1907; S. H. Bickham, 23/9/07 (mixed); S. H. Bickham, 4/8/09.
GLAMORGAN. PENARTH, Dr Trow, 1909.
PEMBROKE. TENBY, R. F. Towndrow, June 1898.
SOMERSET. BURNHAM, W. D. Miller, May 1927.

I cannot, of course, assume that every sheet bearing a name and date given above is authentic, but examples bearing the same label—from different herbaria—are, as a rule, so uniform, that I have little doubt of the gathering as a whole. Where, in my judgment, a gathering includes both *S. Reuteri* and *S. apetala*, I have added the word "mixed" in brackets.

It will be noted—possibly with surprise—that my list includes only 4 counties. Three of these are maritime, and one inland; all on, or near, the Bristol Channel. So far, I have seen no examples of *S. Reuteri* from either Scotland or the North of England, and I do not consider the var. *glabra* Ingham and Wheldon (Journ. Bot. 111, 1908) has any relation to that species. In the paper by F. N. Williams (Rep. B.E.C. 1917, 196) Hertfordshire is probably a misprint for Herefordshire. Mr R. F. Towndrow sent in some interesting examples from "gravel walks, The Rectory, Tedstone Delamere, Herefordshire (v.-c. 36), 22/7/97," but in my opinion the plants were too large, the habit too lax, the stems only slightly branched, the peduncles too long, and some of the sepals were spreading. They represent, I should say, a somewhat frequent form of *S. apetala*. The Ilfracombe plant referred to on the same page was examined both by Mr D. Lumb and myself many years ago, and I find that our considered opinion was "*S. ciliata*, but on poor characters." On p. 195 (*l.c.*) *S. Reuteri* is described as "glabra vel parce glanduloso-puberula." There is, in my judgment, not the slightest justification for the addition of the term "glabra" to the original description. I have never yet seen any example one could so describe—in fact glabrous *S. Reuteri* is, in my experience, far more elusive than glabrous *S. apetala*.

A brief description of the recent Burnham (Somerset) plant may perhaps be helpful to those not familiar with the original description of this species.

Plant very small and squat. All stems under 2.5 cm., much branched, upper stem usually very ciliate, but lower stem nearly glabrous. There are no glandular hairs in either case. Leaves linear, awned, nearly glabrous, no glands but a few long basal cilia. These cilia are usually 4-5 celled in length, markedly tapering and with much-swollen joints. Peduncles densely glandular and all under ¼ in. in length. Flowers apetalous—what look like petals being the 4 light-green, truncate valves of the capsule. The sepals are appressed, nearly 2 mm. long, have broad scarious margins, are densely glandular, blunt (very rarely muticous) and with the apex ± incurved.

It is to be hoped that this slight contribution to our existing knowledge of this species may induce members to examine dwarf examples of apparent *S. apetala* with a view to ascertaining if they possess the characters of *S. Reuteri* given above. It is quite possible that this species has been generally overlooked and may yet be found in localities outside the Bristol Channel area.

BRITISH PLANTS CONTAINED IN THE DU BOIS HERBARIUM AT OXFORD, 1690-1723.

By G. CLARIDGE DRUCE.

This great collection of plants was made by Charles Du Bois, who was born in 1656, and died at Mitcham, Surrey, October 21, 1740, where he was buried. He was a London merchant, and treasurer of the East India Company, an office which gave him an opportunity of corresponding with men of science abroad and of accumulating so important a collection of plants from India. His chief contributor there was Dr Edward Bullkley, of Madras, where he was an ingenious surgeon in the employ of the Company at Fort George (see Petiv. *Musei*). From the Cape he received many plants from another of the Company's surgeons, Mr Alexander Brown, formerly in India, who removed to the Cape. A huge herbarium of British plants, which had been formed by the Rev. William Stonestreet, who died in 1716, also came into his possession.

Du Bois' collection must have been left or given to the East India Company, since in the life-time of Professor Humphrey Sibthorp that Company presented it to Oxford University (see Prof. Williams' MS.). The plants were contained in 80 elephant folio volumes, numbering, it is said, about 13,000 sheets, and were arranged according to Vol. i., 1686, and ii., 1688, of Ray's "Historia Plantarum," to which they afforded a very valuable guide, since in many cases they were the types. In addition to the contributors already mentioned there are specimens from James Petiver, Queen's Botanist to Mary II.; Leonard Plukenet, Apothecary to the Charterhouse; John Aubrey of Wiltshire, a nephew of Henry Lyte; John Evelyn, the author of the "Silva"; his brother, Daniel Du Bois; the Essex botanist, Samuel Dale; Dr Richardson of Bierly, Yorkshire; Sir George Crooke; Sir Hans Sloane, whose great collections are in the British Museum; Samuel Doody, Keeper of the Chelsea Garden; William Sherard, the founder of the Sherardian Chair of Botany at Oxford; Robert Plot, the author of "The Natural History of Oxfordshire;" the Rev. Adam Buddle, the Suffolk botanist; Edward Lhwyd (or Lwyd), the Welsh worker at Snowdonia; William Stephens, once lecturer in Trinity College, Dublin; H. Herrmann of Leyden; the eminent Pitton Tournefort; Prof. Nissole of Montpellier; Rev. John Banister of Virginia; Mark Catesby of Carolina; William Vernon of Maryland; Isaac Rand, a keeper of the Chelsea Garden; J. Bobart, the younger, of Oxford; Dr Manningham of Slinfold, Sussex; J. Dillenius, of Oxford; Dr David Kreig, F.R.S., a German voyager to Maryland; Fettiplace Bellers of Gloucestershire, whose collection went into the hands of Ingram of North Leach; T. Herle of Lisbon; Dr William Houston, a West Indian collector; Philip Miller, of the Chelsea Garden, and author of the "Gardener's Dictionary;" R. Millar, of the West Indies; James Cunningham, of China; Salvadore of Spain, and other donors.

The plants were well selected, carefully prepared, and neatly mounted and labelled in a copper-plate hand. The Indian specimens frequently have the vernacular Tamil name added, written on slips of bamboo. Seeds and fruits are often supplied, and there were copies of medical notes, recipes, etc., attached. Here are two such. "Samuel Wallis of Stamford, who having been in a sick and languishing condition for 13 years, was in ye year 1658 wonderfully restored to health by one that knocked at his door, and came into his house, and together with the Holy Counsel he gave him, directed him to make use of two red sage leaves and one bloodroot leaf steept in beer for 3 days, and for a whole month to be in the fresh air in some country town, and told him when he should recover, which fell out accordingly." How much of the cure was due to the sage and how much to change of air and scene who shall say. "Yarrow is a very fit plant to make green walks, where the ground is hard and dry; it never withering (when well rooted) in the greatest heats of our summers." There are also extracts from sermons and many copies of Boyle's recipes.

When in 1880 I first saw these volumes of Du Bois, they were placed on the top shelf in what was little more than a loft above the lecture room at the Botanic Garden. There were no facilities for warming, and the place was damp. The only means of access was a loose ladder of such a ricketty structure as to deter such a worker as the Rev. W. W. Newbould from coming to take up his residence in Oxford which he contemplated in order to work out the old botanical material in which Oxford was so rich. The Du Bois herbarium was the only thing in order there. The immense mass of the Morisonian (Bobartian), Dillenian, and Sherardian collections were in loose unarranged sheets, often unmounted. Even the Fielding Herbarium was mostly unnamed and roughly sorted into the different families. So far as consultative facilities were concerned it was chaotic. At that time I little thought it would fall to my lot to bring rude matter into due form. In the course of over 40 years that has been done, and with the collaboration of Dr Vines the Morisonian and Dillenian collections have been described in two volumes. To return to the Loft. Never in all my rock-climbing experience have I experienced such dangers as I had in stepping off without any hand rail on to the uppermost rungs of a wobbly ladder, with a bundle of this old material under one arm and clutching with the other at the ladder as one began the perilous descent. Nothing more serious happened than sometimes one had to drop a bundle to the wolves in order to save a slip. In this way at leisure moments I went through the British material here described, and also through the other herbaria. The whole of the Dillenian flowering plants were remounted by me at my own house in the small hours after business was over, of course, without any cost to the Department.

So things went on after the departure of Lawson and until the advent of Prof. I. B. Balfour, who came like a tornado. All the old things had to be changed, the herbaria sorted in, and the gardens remodelled. Then the garden plants were arranged according to the Linnean system. Now the beds had to be refashioned and the plants put in their natural families. Under the care of the two Baxters—father and son—both good men, the former a remarkable man, the latter one to whom the University was under a debt for planting the trees in the Parks, the plants in the old Physic garden did well and looked happy. The radical and rapid change now made killed off many of the rarer plants. The gardener, a Baxter of the third generation, a difficult man to get on with, did not welcome the change, and the relations between him and the Professor became so strained that the place knew him no more. So terminated the connection of the Baxter family with the garden which had lasted nearly a century.

All to the good was Balfour's decision to remove the herbaria from the loft and place them in the building which for many years had been the dwelling-house of the Sherardian Professors. Alas, Balfour, accustomed to other ways and to the use of modern methods, issued an edict to cast all these old collections into one general herbarium. I had no official status then: indeed I had only been a visitor in Lawson's time. He had very generously given me carte blanche, and in the interregnum between his resignation and the arrival of Balfour, with H. E. Garnsey, I was an honorary but, I may say, an ardent worker at the old material. In the course of my work, when vainly trying to find Sibthorp's British plants, some important discoveries were made, including the unearthing from a pile of material in the coke-house, the Herbarium of Gregory of Reggio of 1606, of which I hope to give a detailed account at a later date. Therefore I could only try to induce Balfour to leave the collections intact until they could be carefully examined, and to concentrate upon the modern plants which could be sorted into the Fielding Herbarium. This suggestion did not prove acceptable, and in order to save the dispersal of the Morisonian, Dillenian, Sherardian, and Sibthorpian collections the Du Bois plants were sacrificed—as at that time I did not realise what light they threw upon the Raian plants. So these 80 volumes were cut up, and the plants in them were mounted by not very careful or competent hands, losing fruits and seeds in the disposal. Then, too late, it was brought home to the Professor that as they only had pre-Linnean names, they could not be sorted into the general collection so they were tied up in bundles, in the process of which much damage was done, and put in a storeroom where they remained for many years. Subsequently I named and put all the British specimens into their proper order. The European specimens were for the greater part also examined, and placed in blue paper covers. The very large number of Indian plants are now in pink paper covers. Very many of the Madras specimens have been identified by Mr J. Gamble. Prof. Dr Burtt Davy has named many South African species, but the plants for North Africa still require critical examination. These are in orange coloured covers. The numerous and valuable American specimens, in green paper covers, are to a great extent unidentified although some of the grasses have been determined by Dr N. L. Britton and others. The mosses have been mostly identified by Mr H. N. Dixon, and Messrs Batters and E. M. Holmes have named the algae. Perhaps later on the names of the identified plants may be published here as in many cases they are the earliest localised examples from the countries where they were gathered.

It is to be noted that Du Bois alludes to Mr Alexander Brown as collecting some algae from the Sussex coast. One wonders if he is the same Alexander Brown, a surgeon at the Cape, who was so generous a contributor to the herbarium. Mr Ernest H. Wilson in his "Plant Hunting," mentions the name of Mr J. Stonestreet as an Australian explorer. He may have been a connection of the Rev. W. Stonestreet, of whom few particulars seem available. Yet Petiver dedicated tab. xx. of his "Gazophylacii" to him. The Du Bois collection is now preserved in eight cabinets in No. 1 Room at Oxford. It may be said that Daniel Du Bois, the brother of Charles, helped greatly in the formation of the herbarium. The name Du Bois is commemorated in the genus *Duboisia* of the Solanaceae. Petiver dedicated tab. xv. of his "Gazophylacii Naturae" to Charles. In 1730, the Society of Gardeners published a folio called "Catalogue of Trees and Shrubs, both Exotic and Domestic, which are propagated for Sale in the Gardens near London." The preface, in which the early horticulturists are duly honoured, says, "But to none of the before-mentioned persons is England more indebted for introducing trees, plants, flowers, and fruits, than to the learned and ingenious Charles Du Bois, Esq., of Mitcham, who has not only been very industrious to procure plants from abroad, but also as generous in communicating whatever his garden would afford, as also many useful observations relating both to their culture and uses, to all delighters in planting and gardening; and it is to him we are greatly indebted for many valuable trees and plants which enrich this catalogue." In 1835 (Loudon *Arb.*, vol. i., 63) it is stated that the garden at Mitcham was then occupied by Mr Blake, an auctioneer of Croydon. The house of Du Bois had long been pulled down, but in the grounds many trees planted by him still remain—a very large weeping willow, a nettle tree, with branches covering a space 50 feet in diameter, and a trunk 6 ft. 8 in. in circumference—a *Pinaster* with a clean trunk 40 feet high, the girth at 3 ft. from ground 9 ft., and a total height of 60 ft., a very large old Mulberry, large and old Scotch Pines, a large old Stone Pine, *Prunus Mahaleb*, a fine *Ptelea trifoliata*, a stag's horn Sumach, an old *Bignonia radicans*, a large *Arbutus* and some other fine specimens.

The following localised specimens have been determined by me, and as they in many cases are the first evidence of the plant occurring in the county it has been thought desirable to put them in an accessible form, with any original notes about them contained on the accompanying labels. The old name is given in italics. The counties and notes have been supplied by me. The prefixed numbers are those of the second edition of the British Plant List.

PHANEROGAMS.

6/3. Ranunculus acer L.
"Common upright *Ranunculus*: ye flowers when decaying turn white on ye insides, at Dulwich." Surrey.

6/7. Ranunculus Flammula L., var. tenuifolius Wallroth.
"*R. Flam. minimus cauliculis repentibus* N. D. I found it in Surrey [and] *R. Flammeus repens folio angustissimo flore minimo.* D. Rand."

9/1. Helleborus viridis L. and 9/2. H. foetidus L.
Leaf specimens of both species on one sheet, said to have been found by "Mr J. Sherard in a great many places in Brundish parish in Suffolk." but E. Suffolk is only credited with the latter species in the *Synopsis* 272, 1724, and in the *Flora of Suffolk*.

13/3. Delphinium Ajacis L.
"*Delphinium majus sive vulgare.* Found growing plentifully among the corn in Swaffham field in Cambridgesh. J. Sherard."

15/1. Actaea spicata L.
"*Aconitum racemosum Actaea quibusdam* J. B. Malham Cove." Yorks. Already recorded by Ray.

17/1. Berberis vulgaris L.
"*B. dumetorum* C. B. Near Audley End by Walden in Essex by Mr J. Sherard."

20/1. Castalia (Nymphaea) alba Link.
"*Nymphaea alba* Ger. Gathered in Sir Jonathan Andrew's Pond in Kempton Park in Middlesex." The earliest evidence for that county.

22/1. Meconopsis cambrica Vig.
"*Argemone Cambro-Britannica-lutea* Park. Found by the River Side at Llanberis by Mr James Sherard." See Ray *Catal.* 1670.

24/1. Roemeria hybrida DC.
"*Papaver corniculatum, violaceum* C. B. Among Corn in Swaffham Field in Cambridgeshire, by J. Sherard." See Ray *Catal. Cant.* 1660.

31/1. Capnoides (Corydalis) claviculata Druce.
"*Fumaria alba latifolia*, Blackheath. J. Sherard." Kent. Recorded thence in Merrett's *Pinax*, 1666.

32/4. Fumaria purpurea Pugsley.
"*Fumaria major scandens floribus albis, pictus saturate purpureo crescit* in Hort. D. Du Bois." This is at Mitcham, Surrey, but it may have been introduced there.

35/1. Radicula Nasturtium Druce. (Nasturtium officinale Br.).
"*Nast. aquat. an praecocius* D. Dale. It grows about Braintree in Essex. Mr Stonestreet."

35/3. Radicula islandica (Oeder) Druce.
"*Eruca aquatica* Ger. In Peckham field." Surrey.

36/3. Barbarea Barbarea (L.) Karst. (B. vulgaris Br.).
"About ye ditches near Bathe. Du Bois." Under the wrong name of Wild Navew.

37/1. Arabis hirsuta Br.
"*Barbarea muralis* J. B. Found growing on walls in Stoke between Braintree and Lynn in Norfolk."

43/4. Draba muralis L.
"*Bursa pastoris major loculo oblonga.* Craven, Yorks. From Isaac Rand."

44/1. Erophila verna Meyer, var. stenocarpa (Jord.).
"*Paronychia siliquis longioribus et angustioribus.* Found by Mr Rand near ye Town." Earliest example from Middlesex.

49/7. Sisymbrium Thalianum Gay. (Arabis Thaliana L.).
"In ye fields near Chelmsford." Essex.

50/1. Erysimum Cheiranthoides L.
"*Erysimum Galeno* plentifully in ye Osier grounds near Ely." Cambridgeshire.

59/1. Bursa pastoris Weber, var. densifolia (Mott) Druce.
"*Bursa pastoris media* C. B. Pin. 108. Crescit in arenosis circa Londinum. Buddle. A vulgari specie distinctam censet. Bene exprimitur in Icone Tabernamont. From Mr Stonestreet."

61/2. Lepidium latifolium L.
"Gathered by the River side near Colchester. Du Bois." Essex, where it still abounds.

61/7. Lepidium Smithii Hook.
"*Thlaspi supinum, hirsutum, maritimum.* Found on ye seashore in ye Parish of Ham near Pool in Dorsetshire. Flore albo est." The first record for Dorset.

85/3. Reseda Luteola L., forma.
"An *Reseda* Species nova, found amoung the Corn in a field behind Mount Ephraim near Tunbridge Wells, in August 1699." Kent. Also typical specimens from "the Stone Quarries near Bathe." Somerset.

96/1. Silene maritima Sm.
"*Lychnis marina anglica* Lob. Gathered upon Crib Goch." One of Dr Richardson's specimens from Carnarvonshire.

96/3. Silene conica L.
"A new *Lychnis* found at Dover by Mr Sherard in 1715." Dillenius recorded it in the *Synopsis* of 1724, p. 341. This seems to be the first British specimen.

96/9. Silene Otites L.
"*Lychnis viscosa, flore muscosa* C. B. Prope Newmarket." As recorded in Ray *Hist.* 1002, 1688.

96/10. Silene nutans L.
"*Lychnis major noctiflora* Dubrensis. Found at Dover by J. Sherard in 1715."

98/3. **LYCHNIS ALBA × DIOICA.**
"*Lychnidis alba vulgaris varietas flore dilute purpureo.* Found by Mr Rand near Chelsey." The earliest British evidence of this hybrid.

100/8. **CERASTIUM SEMIDECANDRUM L.**
"*Alsine hirsuta minor* not mentioned in the *Synopsis* [Ed. 2, 1696]. Isaac Rand." This is one of the earliest British examples.

101/6. **STELLARIA DILLENIANA Moench, var. PALUSTRIS (Retz.) Druce.**
"In some watery places on Peckham fields, James Sherard." Surrey. See Ray *Syn.* 207, 1696.

102/2. **ARENARIA CILIATA L., var. HIBERNICA (Ost. & Dahlst.) Dr.**
"*Lychnis minima Hibernica, flore albo* D. Richardson hanc accepit a D. Edw. Lhywd." The earliest example from the British Isles being discovered by Lhywd about 1699. It is probably one of the plants referred to in Phil. Trans. xxvii., 524, 1712.

102/7. **ARENARIA PEPLOIDES L.**
"*Glaux exigua maritima* J. B. Gathered on the Sea coast near Harwich, Apr. 1710. Rev. W. Stonestreet." Essex.

117/2. **MALVA SYLVESTRIS L., var.**
"*Malva vulgari similis flore albo minore.* Found by Mr Rand within ye Walls of Windsor Castle. It continues the colour and smallness of the flower from seed." Probably a form of the var. *micrantha* Bromf. Fl. Vect. 80, 1856. See *Fl. Berks* 113, 1897.

117/4. **MALVA PUSILLA With.**
"*M. sylvestris foliis sinuatis, minoribus, flosculis minimis nostras.* Found by Mr Rand at Hithe in Kent." First British record.

123/1. **TILIA PLATYPHYLLOS Scop.**
"*T. sylvatica nostras, foliis amplis hirsutie pubescentibus* . . . Gathered near Streatham Wells, Surrey. Du Bois." See Sir J. E. Smith *Engl. Bot.* iii., 19, 1825.

127/10. **GERANIUM MOLLE L.**
"*Geran. colum. vulgaris simile sed magis incanum, floribus albis.* Found by Mr Rand in Kent." First Kentish record.

127/14. **GERANIUM ROBERTIANUM L., var. ALBUM.**
"Plentifully in a Lane between Eltham and Chiselhurst in Kent, Mr James Sherard." Dillenius records it from this locality in the *Synopsis* 358, 1724.

128/1. **ERODIUM MARITIMUM Aiton.**
"*G. pusillum supinum maritimum.* About Pensance, Du Bois." It was first recorded for Cornwall in Merrett's *Pinax*, 1666.

128/2. **ERODIUM MOSCHATUM Aiton.**
"*Geranium moschatum* C.B. Near St Vincents Rock by Bristoll, Du Bois." W. Glostershire.

128/3. ERODIUM CICUTARIUM Aiton.
"*Geranium Cicutaefoliis tenuissime sectis* D. Doody. Found near London." It is referred to in the *Flora of Middlesex*, p 69.

142/1. ACER PSEUDO-PLATANUS L.
"*Aceris majoris varietur foliis in segmenta acutiora dissectis.* Grays Inn walks." First Middlesex record.

151/2. ONONIS REPENS L.
"*Anonis non spinosa hirsutior, flore minore.* Found in Kent. Mr Stonestreet. *A. procumbens maritima nostras, foliis hirsutie pubescentibus*, Raii Syn. 196. Sandy sea-shore, Cornwall, Mr Rand. Another form found by Mr Doody near Greenwich."

153/3. MEDICAGO SATIVA L.
"*Medica major erectior floribus purpurascentibus* J. B. Gathered wild near Norwich by Mr James Sherard.

153/4. MEDICAGO DENTICULATA Willd.
"*Medica coronata.* Found by Mr Rand near Hampton. Also from Orford in Suffolk, Du Bois." "*Medica polycarpos fructu minore compresso scabro* Ray *Syn. App.* This grows in Peckham Fields among the Corn plentifully." It is the var. *apiculata* (Willd.) from Surrey.

153/6. MEDICAGO MINIMA Bart.
"*Medica echinata minima*, Newmarket," as mentioned by Ray.

155/6. TRIFOLIUM STELLATUM L.
"*T. stellatum glabrum* Ger. Emac. It grows in Dartford Salt Marsh and about Tilbury Fort. Du Bois." It appears probable that Du Bois mistook *T. maritimum* which did not occur there for this more southern species, as there is no corroborative evidence of its occurrence in Kent, but the specimen is correctly named.

155/7. TRIFOLIUM ARVENSE L.
"A whiter sort of Haresfoot, near Croydon, Du Bois. Gathered in 1719."

155/8. TRIFOLIUM MARITIMUM Huds. (T. SQUAMOSUM L.).
"*T. stellatum glabrum* Ger. In England in Salt Marshes, Mr Stonestreet."

155/10. TRIFOLIUM SCABRUM L.
"*T. parvum hirsutum flore parvo* . . . Ray Hist., p. 945. Gathered on Marlborough Downs in Wiltshire, Du Bois." The first record for the county. See also Rand in *Herb. Brit. Mus.*

155/10. TRIFOLIUM SCABRUM L.
"*T. flosculis albis in glomerulis oblongis* . . . Found growing at Newmarket by Mr J. Sherard," whence it is recorded by Ray.

155/11. TRIFOLIUM STRIATUM L.
"*T. parvum hirsutum* etc., Raii Syn. At Chelsy, Mr Stonestreet."

155/13. TRIFOLIUM FRAGIFERUM L.
"*T. fragiferum* Ger. In the moist places of the Kings-Mead near Bath, Du Bois." Somerset.

171/2. **Ornithopus perpusillus** L.
"*Ornithopodium radice nodosa* Park. Gathered on Tunbridge Wells Common. Du Bois." Kent.

173/1. **Onobrychis Onobrychis** (L.) Karst. (vichfolia Scop.).
"Gathered in the fields near Bathe." First record for Somerset.

176/1. **Vicia sylvatica** L.
"*Vicia sylvatica multiflora maxima.* Sent from Oxford by Mr Jacob Bobart."

176/13. **Vicia angustifolia** Reich.
"Gathered near Colchester." Essex.

176/14. **Vicia Lathyroides** L.
"*V. parva praecox Soloniensis.* Found by Mr Rand at Greenhithe." The first Kent record. See Ray *Syn*. 321, 1724.

178/2. **Lathyrus sylvestris** L.
"*L. Sylvestris* Dod. Gathered by Comb Park Gate in the hedge by the road-side going to Mitcham. Du Bois." First record for Surrey.

178/4. **Lathyrus maritimus** Big.
"*Pisum maritimum.* Found growing by Mr James Sherard at Hastings in Sussex, on ye Beach near the old Castle."

178/5. **Lathyrus palustris** L.
"*Lathyris Viciaeformis.* From Mr Stonestreet. Found in Peckham Field by Mr Sherard." This is Merrett's locality. See the *Pinax* of 1666.

185 1. **Rubus idaeus** L.
"*R. idaeus spinosus fructu rubro* J. B. Found growing by Mr James Sherard in a wood by West Wickham in Oxfordshire." This locality is in Bucks, for which county it is already recorded in the *Phytologia* of 1650.

185/47. **Rubus ulmifolius** Schott.
"The common Bramble with the eggs and punctures of Insects, in August 1723 about Tunbridge Wells, Kent."

185/154. **Rubus saxatilis** L.
"*Chamaerubus saxatilis* C. B. At Malham near Settle, J. Sherard." Yorks.

189/8. **Potentilla procumbens** Sibth.
"*Tormentilla reptans alata* . . . D. Plot. Found by Mr James Sherard near Braintree in Essex."

189/9. **Potentilla erecta** Hampe.
On the sheet of *P. procumbens.* "Found by Mr James Sherard near Braintree in Essex." Both first records for that county.

190/1. **Alchemilla vulgaris** L.
"*Alchimilla* Ger. Found near Bibury, Gloucestershire, by Mr James Sherard." The first county record. It is the *A. pratensis* Schmidt.

191/2. Agrimonia odorata Mill.
"*A. odorata* Park. and Ray Historia p. 400, 1688." Although not definitely added to the British flora till 1857, the plant was well known to the earlier botanists. Unfortunately no locality is given on these specimens.

194/2. Rosa canina L.
"*R. sylvestris fructu rotundo, majore, glabro.* Found by Mr Manningham near Bosham, 3 miles from Chichester." Sussex. It is without flowers or fruit, the leaves are glabrous and suggest a rose of the *Transitoria* group.

196/1. Crataegus monogyna Jacq., forma variegata.
"Striped Hawthorn. Gathered at Upcerne in Dorsetshire."

203/2. Chrysosplenium oppositifolium L.
"By a spring near Bathe," whence Gerard records it.

207/3. Ribes rubrum L.
"*Ribes vulgaris fructu rubro* Ger. . . . plentifully in a Spinny by the River side near Mr Leighs at Hally in Kent, Mr Jas. Sherard."

210/1. Cotyledon Umbilicus-Veneris L.
"*Cotyledon vera radice tuberosa* J. B. On an old stone wall in Dorsetshire. Du Bois." The earliest record for the county.

213/2. Drosera longifolia L.
"*Ros Solis longifolius.* Found by Mr Sherard on Hinton Moor in Cambridgeshire and in a bog on Westfield Downs, 4 miles on this side Hastings." Sussex.

216/2. Myriophyllum spicatum DC.
"*Potamogeiton pennatum spicatum ramosius, foliis brevioribus.* In ye ponds on Clapham Common, Mr Stonestreet."

220/1. Epilobium angustifolium L.
"*Lysimachia speciosa, quibusdam Onagra dicta siliquosa* J. B. . . . . wild about Sheffield in Yorksshire, Mr Du Bois."

220/3. Epilobium roseum Schreb.
"*Lysimachia siliquosa latifolia glabra altera minor.* Found by Mr Rand in Kent. Differt a *Lysim. Siliq. glabra minore*, R. Synops., *foliis longioribus.*" The first British record.

250/1. Carum Carvi L.
"Grows plentifully near Lynn in Norfolk and in Christs Colledge meadows in Cambridge." Leaves only. Earliest record for Cambridge.

253/2. Sium erectum Huds.
"*Sium* found in ye river Colin St [Colne St Aldwyn] Albins. Mr Bellers." The first Gloucester record.

261/2. Chaerefolium Anthriscus (L.) Thell. (Anthriscus Scandix Beck.).
"*Caucalis pumila maritima flore albo.* Found by Mr Du Bois near Harwich, and in the Salt Marshes near Harwich." Essex.

265/6. Oenanthe Lachenalii Gmel.
"On ye sea shore near Pool. Mr Stonestreet." The first evidence for Dorset.

274/1. Angelica sylvestris L.
"In ye ditches about Bathe." Somerset.

274/1. Angelica sylvestris L., forma.
"An *Angelica sylvestris* Ger. Found in the Boggy Woods about Tunbridge Wells, and supposed to be a new sort and not the above written. It wants the small leaves, that are under the single umbell, which the Water Angelica hath."

276/2. Peucedanum officinale L.
"*Peucedanum* Ger. It grows in the marshy ditches near Shoreham in Sussex, and also from a bank near Feversham Creek in Kent a little below the Town. From Mr Stonestreet." The Sussex specimen is only in leaf and is, I believe, correctly named, but no recent confirmation exists of its occurrence in that locality.

276/3. Peucedanum sativum Benth. & Hook. (Pastinaca sativa L.).
"*P. sylvestris latifolia* C. B. On the hills about Bathe." Somerset.

287/2 Sambucus nigra L., var. laciniata L.
"*S. laciniata* J. B. Found plentifully growing wild near Mr Leighs at Hally near Dartford." See Ray *Synopsis* 461, 1724.

287/2. Sambucus nigra L., var. leucocarpa.
"*Sambucus fructu albo*. Found growing wild by Mr J. Sherard at Halley near Dartford in Kent."

295/1. Rubia peregrina L.
"*Rubia sylvestris* Ray Hist., p. 480. Gathered on St Vincents Rocks near Bristol. Du Bois." whence Gerard (*edit. secunda*), records it in 1633.

296/1. Galium boreale L.
"*Mollugo montana erecta quadrifolia*. It grows about Orton, Winandermeer in Westmorland. From Isaac Rand."

296/3. Galium erectum Huds.
"*Gallii* species prope Oxonium a D. Buddle." The first British record.

296/4. Galium hercynicum Weig.
"*Mollugo montana minor, Gallio alba similis* Ray Hist., p. 482. At Tunbridge Wells. Du Bois." First record for Kent.

296/6. Galium uliginosum L.
"*Aparine palustris minor, Parisiensis flore albo* Tourn. Found by Mr Buddle in some ditches near Hampstead." The first record for Middlesex and probably for Britain.

296/13. Galium anglicum Huds.
"*Aparine minima*. On the walls of Eltham in Kent. From Mr Stonestreet."

296/14. Galium Cruciata Scop.
"*Cruciata* Ger. Plentifully about Dartford, Kent. Du Bois."

298/3. ASPERULA CYNANCHICA L.
"*Rubeola cynanchica.* Roadsides on Salisbury Plain. Du Bois." First record for Wilts. Also "Gathered on the Banks by Roadside going down Beacon Hill in ye way to Bathe." Somerset.

304/3. VALERIANELLA DENTATA Poll.
"*Valerianellae vulgaris, seu Lactucae agninae species major serotina* Moris. Praelud. Found among corn at Chiselhurst in Kent. Du Bois." First as British.

308/5. SCABIOSA ARVENSIS L., var. INTEGRIFOLIA Coult.
"*Scabiosa vulgaris varietas foliis non incisis.* Found by Mr Buddle near the town." The first record for Middlesex.

314/1. BELLIS PERENNIS L., forma.
"*Bellis minor.* Supposed to be starved by the place it grew in . . . the dry Banks . . . in Wiccomb Parish in Kent. All the Plants of Daisys were of this size." One inch high.

318/19. ASTER TRIPOLIUM L., var. GLABER Bolzon.
"*Tripolium minus* C. B. at Harwich, Essex." Samuel Dale's writing.

320/2. ERIGERON ACER L.
"Gathered near Tunbridge Wells, Kent. Du Bois."

324/3. FILAGO GERMANICA L.
"*Gnaphalii seu Herbae impia vulgaris varietas.* Found by Mr Rand near ye Pits of Fullers earth between Maidstone and Barsted in Kent."

327/1. ANAPHALIS [MARGARITACEA C. B. Clarke], var. SUBALPINA A. Gray.
"*Elichrysum Americanum latifolium* Tournef. 453. Found growing near Bocking Church in Essex by Mr J. Sherard."

368/3. ANTHEMIS ARVENSIS L.
"*Chamaemelum flore majore, foliis exiguis tenuissime dissectis.* Found near Greenwich by Mr Buddle." First Kentish record. Also from the same place "by Mr Stonestreet, who gathered it also in Peckham Field, Surrey."

368/3. ANTHEMIS ARVENSIS L.
"*Chamaemelum flore majore.* Found by Mr Buddle near Greenwich." Kent, probably the first British record.

368/4. ANTHEMIS COTULA L.
"*Chamaemelum amarum.* Gathered in Peckham Field. Mr Stonestreet." Surrey.

370/13. CHRYSANTHEMUM PARTHENIUM Bernh.
"*Matricaria florum petalis vulgari amplioribus.* Common about Tunbridge Wells." First Kentish record.

371/1. MATRICARIA INODORA L.
"*Cotula flore fistuloso Cyanoides.* Found in the Field between the Wood and the Bog near Jone Coles House in Wiccombe Parish in Kent, July 15, 1712." This is forma *cucullata* in which the ligulate flowers are tubular, and the first Kent record for the species. Also the var. *salina* Bab., "*Chamaemelum*

maritimum capitulo majore. On ye shores of Weymouth bay. Mr Stonestreet." First Dorset record.

371/1. Matricaria inodora L.
"*Chamaemelum majus folio tenuissimo caule rubente.* It grows frequently about London, Battersea, and Putney." This is a type specimen and the earliest record for Middlesex. Also as "*Chamaemelum inodorum.* Gathered at Chiselhurst in Kent in 1714, Du Bois." The first Kentish record.

378/4. Artemisia maritima L., forma.
"*Absinthium Seriphium Gallicum* C. B. This I found with the Seriphium Belgicum, August 1708, in great plenty at Harwich on the west side of the towne. And is the same with Mr Ray's Specimens collected at Montpellier." The writing is by Samuel Dale. The flowering branches are erect and the foliage less hoary than the type.

378/4. Artemisia maritima L.
"*Absinthium maritimum foliis breviores laciniis divisis ramulis et caule minus extentilis.* Found by Mr Rand on the coasts of Kent." This is probably the var. *gallica.* The plant is hoary, with erect flowering branches. Another specimen with less divided leaves from "near Malden, Essex, by Mr Buddle," labelled "*Ramulis longioribus et floribus pendulis oblongis*" belongs to the type as is one from Samuel Dale who says "it is the one formerly observed on Mersey Island and this year, 1708, at St Osyth in Essex." He names it "*Absinthium maritimum latiore folio.*" See Ray *Syn.* 94. Another sheet from "the Salt Marshes at Harwich" is a flowerless one, and a sheet labelled "*Absinthium Seriphium Belgicum* C. B. 179" unlocalised from S. Dale "is sent to show the difference," and is probably the var. *gallica* (Willd.).

383/7. Senecio squalidus L.
"*Jacobaea Sicula Chrysanthemi facie Bocconi* Ray Hist., p. 286. From Mr Jacob Bobart of Oxford." Interesting as showing that the Oxford Ragwort was cultivated at Oxford in the Physic Garden at this time.

393/3. Arctium minus Bernh.
"*Bardana capitulis minoribus non lanuginosis.* Found by Mr Buddle near ye Town." Middlesex. "*Bardana minor.* From Mr Isaac Rand. Found at Lee in Kent." First British record.

396/3. Cirsium heterophyllum Hill.
"From Snowdon." Carnarvonshire. Originally recorded by Ray.

405/7. Centaurea nigra L., var. nemoralis (Jord.).
"*Jaceae nigrae vulgaris varietas.* Gathered near Bathe." Somerset. With this a specimen, probably *C. pratensis* Thuill., teste C. E. Britton.

405/12. Centaurea Cyanus L.
"In ye Corn at Mitcham, Du Bois." Surrey.

405/13. Centaurea Scabiosa L.
"*Jacea major* with a very pale purple flower. In the Common Field at Mitcham, Surrey, Du Bois."

416/3. Crepis biennis L.
"*Hieracium Chondrilae fol. asperum.* Between Gravesend and Rochester." See Ray *Hist.* ii., 857, 1688.

416/5. Crepis capillaris Wallr. (C. virens), var. diffusa Druce.
In the fields at Wiccomb, Kent."

416/5. Crepis capillaris Wallr., var. anglica Druce & Thell.
"*Hieracii lutea glabri, sive minus hirsuta* J. B. Ray Hist. i., 234, n. 16, *species major.*" This unlocalised specimen is the earliest example known.

416/10. Crepis taraxacifolia Thuill.
"*Hieracium Chondrilla folio hirsutum* C. B. *H. foliis et facie Chondrilla* Lob. Found by Mr Rand on the banks of the Thames in Kent." First British record.

419/24. Hieracium holosericeum Backh.
"*Pilosella Alpina erecta* . . . In Monte Snowdon, collegit D. Rob. Wyne. From Mr Stonestreet." Carnarvonshire.

419/83. Hieracium pellucidum agg. (teste E. F. Linton).
"*An Hieracium macrocaulon hirsutum folio rotundiore*, Lawson. Found growing plentifully near the Lord Howard's house at Darking in Surrey by Mr James Sherard."

419/145. Hieracium vulgatum Fries agg. (teste F. J. Hanbury).
"Gathered at Tunbridge Wells."

419/224. Hieracium rigidum Fries (teste F. J. Hanbury).
"From Mr Stonestreet. An English plant."

419/250. Hieracium boreale Fr.
"At Tunbridge, *latifol. hirsutum.*" First Kentish record.

421/1. Hypochaeris maculata L.
"*Hieracium latifolium* Pannon. . . . Found by Mr James Sherard on Gogmagog hills and the Devils ditch, Camb." Already recorded by Ray.

421/2. Hypochaeris radicata L.
"*Hieracium hirsutum foliis longis dentatis flore majore.* Found by Mr Manningham near Chichester." Sussex.

422/2. Leontodon autumnalis L., var. pratensis Koch.
"*Hieracium montanum angustifolium alterum* Park. A small Hieracium as you ascend the Glydyr nigh Llanberis, Dr Richardson." Another specimen "Gathered in the meadows about Bathe," Somerset, is the type plant.

422/3. Leontodon nudicaulis Banks.
"*Dens Leonis pumilus saxatilis asper radice fibrosa*, 16, Hist. Oxon." A type specimen from its discoverer, Jacob Bobart, and the label is in his handwriting. Also a specimen "ex Du Bois from Wiccomb, Kent."

427/2. **Sonchus arvensis** L.
"*Hieracium* about ye Stone Quarrys near ye Bathe. Du Bois." Somerset.

427/3. **Sonchus asper** Hill, var. **integrifolius** Lejeune.
"*Sonchus* in Chelsea Physick Garden. This is a kind that keeps constant to its form from seed. Pluk. Alm. 354, Phyt. t. 61, f. 5, Raii Syn."

427/4. **Sonchus oleraceus** L., var. **integrifolius** Wallr. (vel **affinis**).
"*Sonchus foliis longis, angustis, dentatis.* Found by Mr Rand on ye banks by ye road side between Newington and Camberwell."

433/1. **Cervicina hederacea** Druce (**Wahlenbergia hederacea** Schrad.).
"*Campanula Cymbalariae foliis* Ger. Emac. In Cornwall." Already recorded for the county in Merrett's *Pinax*.

445/1. **Calluna vulgaris** Hull, var. **pubescens** Hull.
"*Erica vulgaris hirsuta* Ger. On the Heath near Tunbridge wells. Du Bois." The variety is not mentioned in the "Flora of Kent."

446/1. **Erica cinerea** L.
"*E. tenuifolia* Ger. *foliis ex luteo variegatis.* On the Boggy grounds near Chiselhurst. Du Bois." The first Kentish record.

453/3. **Pyrola minor** L.
"*Pyrola vulgaris.* Found by Mr James Sherard growing plentifully in the hanging wood near Hawilton [Hambledon] by Henley, Bucks."

456/1. **Hypopitys Hypopitys** (L.) Dr. (**H. Monotropa** Crantz).
"*Orobanche Verbasculi odore* D. Plot. Found near Chevening in Kent." First record for that county.

457/2. **Limonium humile** Mill.
"*Limonium foliis angustis acuminatis, floribus laxius dispositis.* Found in ye Salt Marsh near Pagham Church in Sussex, Rev. W. Stonestreet."
"*Limonium folio angusto acuminato, spicis florum compactioribus* D. Dale. Found in Salt Marshes at St Osyths and Walton on ye coasts of Essex." This may be a hybrid.

457/5. **Limonium binervosum** C. E. Salm. (**Statice occidentalis**).
"*Limonium minus maritimum.* Dover Cliffs, J. Sherard." Also "*Limonium minus folio latiusculo, mucronato.* Found by Mr Rand."

458/4. **Statice maritima** Mill.
"*Caryophyllus marinus minimus* Ger. In the Salt Marsh at Harwich in May 1710." The true holotrichous plant.

467/2. **Anagallis arvensis** L., var.
"*A. flore albo ad fundum caerulescente.* Found in ye corn near Quainton in Buckinghamshire. Also "*A. flore purpureo* with the first." First record for the county.

467/3. **Anagallis foemina** Miller.
"*A. caeruleo.* Found by Mr James Sherard in the barren corn fields on the north side of Roe hill." Kent.

477/1. Blackstonea perfoliata Huds. (Chlora).
"*Centaurium luteum perfoliatum.* Gathered on the dry grounds at Wiccombe in Kent. It is either a starved plant or a distinct sort."

480/3. Gentiana verna L.
"Gentian N. D. Near Galloway by Mr Lhwyd." First recorded for Ireland in Hoe's *Phytologia* of 1650.

480/4. Gentiana Amarella L.
"*Gentianella fugax Autumnalis.* Found by Mr Bellers in Gloucestershire." Also from "Bottle hill in Surrey, and near Westerham in Kent."

480/9. Gentiana campestris L.
"*Gentianella* found by Rand on ye Downs near Brighthelmston in Sussex."

498/1. Borago officinalis L.
"*Borago floribus caeruleis* J. B. Grew wild in the Fields near Colchester, and thereby so small, Du Bois." Essex.

506/9. Myosotis collina Hoffm.
"*Myosotis Scorpioides minima flosculis saturata coeruleis.* Near Wandsworth, Middlesex, Mr Stonestreet."

509/1. Echium vulgare L.
"*An Lycopsis Anglica* Lob. This differs from the common *Echium* in having lesser and shorter flowers without the long apices that has. Discovered in Kent by Mr Isaac Rand."

511/1. Volvulus sepium Junger, forma.
"*Convolvulus major* J. B. Found growing thus fasciated by Comb Park, in Surrey, Du Bois."

513/1. Convolvulus arvensis L., var. Stonestreetii Dr.
"*C. flore albo parvo in 5 vel 6 laciniis profunde dissecto.* Found near Henley, Mr Stonestreet." First record for Oxon or Bucks.

527/7. Verbascum Lychnitis L.
"*Verbascum flore albo parvo* J. B. Very common by the Roads in ye Western part of Kent, Mr J. Sherard." Also "*V. nigrum fl. ex luteo purpurascente* C. B. In Kent."

527/8. Verbascum nigrum × pulverulentum = V. Schottianum Schrad.
"Very common about Bury and Norwich, Mr J. Sherard."

535/4. Scrophularia nodosa L., var. Bobartii Pryor.
"*S. major caulibus, foliis, et floribus viridibus* D. Bobart, Ray Syn., 1696, 161. Found near Cumnor." First record for Berks, and it was from this example that Mr Reginald Pryor described the variety.

543/6. Veronica scutellata L.
"*Veronica aquatica angustifolia, minima* D. Buddle accepit a D. Richardson Eboracensis." A narrow leaved glabrous form. Also "*Anagallis rectius Veronica aquatica angustifolia* J. B. On Kirley Moor, Du Bois."

543/7. Veronica Beccabunga L.
"*V. aquat. praecocior.* Found in ye way to Deptford, Mr Stonestreet." Kent.

543/9. Veronica aquatica Bernh.
"*Anagallis aquatica* Lob. Found by Mr Buddle near ye Neat Houses." The earliest Middlesex record.

545/5. Euphrasia nemorosa Pers.
"*Euphrasia tenuiore folio vulgaris.* From Mr Stonestreet." Probably the earliest British specimen.

545/9. Euphrasia curta Fries (teste C. H. Ostenfeld).
"From Mr Stonestreet." The earliest British specimen.

545/15. Euphrasia micrantha Reichb. (gracilis Fr.).
"*Euphrasia* J. B." Unlocalised but the earliest British example collected by Du Bois.

545/18. Euphrasia minima Fries (teste C. H. Ostenfeld).
"Hanc accepi cum aliis in monte Snodon collectis A. D. R. Wynne, non videtur differre ab *Euphrasia vulgaris.*"

545/19. Euphrasia Rostkoviana Hayne.
"*Euphrasia latiore folio, flore majore.*" Unlocalised.

546/4. Bartsia viscosa L.
"*Euphrasia major lutea latifolia palustris.* Towards the farther end of Cornewall, and in ye Isle of Jersey, Du Bois."

549/1. Melampyrum cristatum L.
"In the woods at Madingley in Cambridgeshire by Mr J. Sherard." Recorded thence in *Cat. Pl. Cantab.* 95, 1660.

550/13. Orobanche ramosa L.
"*O. ramosa* Ger. Found among Flax near Beccles in Suffolk by Mr Barker, A.B." First record for Suffolk.

551/1. Lathraea Squamaria L.
"Darking, Surrey. See Ray Syn. Mr Du Bois."

552/2. Utricularia major Schmid.
"*Millefolium palustre galericulatum* Ger." Unlocalised from Du Bois. One of the earliest British examples.

558/7. Mentha aquatica L., forma.
"Mr Buddle takes this to be ye *Menthae aquatica tota nigra* of Dr Merret in his Pinax. 'Tis very like ye Peppermint and as hot. Found by ye New River near Stoke Newington." The first Middlesex record.

558/8. Mentha pubescens Willd., var. hircina (Hull).
"*Mentha aquatica nigricans fervidi saporis* Buddle, by ye River side towards Newington." Middlesex.
Isaac Rand's "*Mentha aquatici genus hirsutum, spica latiore*" is under *M. pubescens* = *hircina* Hull.

558/9. Mentha verticillata Huds., var. acutifolia (Sm.).
"*M. Verticillata. Aromatica folio longiore* D. Rand. Found by him on ye banks of ye Medway plentifully between Maidstone and Ailsford, Kent."

558/9. Mentha verticillata Huds.
"*Calamintha arvensis verticillatae similis sed paullo elatior* D. Buddle. Near Stoke Newington." The first record for Middlesex. See Ray *Hist.* i., 530, 1688.

558/9. Mentha verticillata Huds.
"*M. verticillata minima odore fragrantissimo* Buddle, who found it near Newington, Middlesex. He says the fragrance is that of *Rosa Eglanteria*." The plant is referred to in the "Flora of Middlesex," p. 211.

Samuel Dale's "*Mentha aquatica* L." is *M. verticillata* L., var. *ovalifolia* Briq., and his sheet A. is *M. aquatica* L., var. *capitata* Briq.

558/9. Mentha verticillata Huds.
"*Sisymbrium hirsutum verticillatum* D. Buddle. Observed by Mr Rand by the sides of ditches, not far from the Kings Arms Stairs, a landing place in Surrey, over against Whitehall." Two sheets of different forms of the hybrid.

558/10. Mentha gentilis L., var. variegata (Sole).
"*M. aquatica verticillata foliis e luteo virentibus odore vehementiore* D. Vernon ex Bobart." And "*M. verticillata foliis latis acuminatis e luteo variegatis, odore grato*, ex horto D. Reynardson." Probably the var. *Hackenbruchii* Briq., the var. *variegata* (Sole).

Buddle's "*Sisymbrium ramosissimum*" is *Mentha aquatica*, var. *acuta* Briq.

558/10. Mentha gentilis L., var. gracilis (Sole).
"*M. verticillata hortensis, foliis glabris acuminatis* ex Horto D. Price, Newingtoniae. *An Menthae Cruciata M. Ocymi odore, M. vulgata sive fusca* etc. Lob. 504, cujus Icon, exhibetur sub Titulo Menthae Cruciatae, Ibid., p. 507, ex sententia D. Rand." Perhaps not separable from var. *cardiaca* Briq., teste J. Fraser.

558/11. Mentha cardiaca Baker.
"*M. Cardiaca vera*, ex sententia D. Bobart. Gathered in the Physick Garden at Oxford."

558/12. Mentha rubra Huds., var.
"*M. crispa verticillata foliis rotundiora* J. B. I found this wild Anno 1708 at Black Notley." Label in Dale's writing. The first record for Essex. Also "*M. Balsamita sive latifolia odorata* Merr. Pin. By ye New River-side near Stoke Newington, Middlesex." The first record for Middlesex. Both sheets come under var. *raripila* Briq., teste J. Fraser.

558/13. Mentha arvensis L., var. austriaca Briq., teste J. Fraser.
Du Bois' own specimen, gathered in his "Garden at Mitcham," Surrey. Buddle's unlocalised specimen is *M. verticillata* L., var. *adulterina* Briq., teste J. Fraser.

561/4. THYMUS SERPYLLUM L., forma.
"*Serpyllum minus flore albo.* Found under ye cliff on this side of Woolwich, Mr Stonestreet." Kent.

569/1. NEPETA CATARIA L.
"*Nepeta folio angustiore.* Found in ye Road a little on this side Dartford in Kent. Du Bois."

572/1. SCUTELLARIA MINOR Huds.
"*Cassida flor purpureo.* Gathered in the Forest of Dean by Mr Bellers." First Gloster record.

576/1. MARRUBIUM VULGARE L.
"*M. album.* Gathered at Chelsey. Du Bois."

577/4. STACHYS PALUSTRIS × SYLVATICA (under S. AMBIGUA Sm).
"*Galeopsis spicata, foliis Menthae sativae hirsutis.* Differt a *Panace Coloni* Ger. [*S. palustris*] radice non strumosa, foliis mollioribus et hirsutioribus, cauli per pediculos longiores annexis, et flore saturate purpureo, qui in illo dilute purpurascit. Found by Mr Stonestreet in a Kitchen Garden at Stourminster Marshal and Winborn, Dorset." The first British record for the hybrid.

577/5. STACHYS PALUSTRIS L.
"*An Panax Coloni* at Tunbridge." Kent. The specimen is a narrow leaved form with strongly hairy stem, approaching the var. *canescens* Lange.

577/13. STACHYS OFFICINALIS Trev. (BETONICA OFFICINALIS L.).
"*Betonica major Anglica.* Found by Mr Bobart in ye Ld. Abingdons woods at Ricot [Oxon] eadem videtur *Betonica majore Danica* Park." The specimen is a luxuriant form of the Wood Betony and the earliest Oxford reference.

578/2. GALEOPSIS TETRAHIT L.
"A variety of *Lamium Cannabinum flore rubro.* Found near Chiselhurst in Kent. The flowers are more specious, larger and differently marked. Du Bois."

578/4. GALEOPSIS LADANUM L.
"*G. Ladanum dicta, maritima major.* Specie videtur differre a *segetali.* I found this on ye Beach of ye Sea about half a mile eastward from Weymouth." A robust broad-leaved form, perhaps to be referred to var. *latifolia* Hoffm. Also "*Ladanum segetum maritimum nascens, an diversum a vulgare.* On ye shores near Weymouth, Mr Stonestreet." The plant is a narrow-leaved form with closely aggregated and densely hairy verticillasters—probably the var. *canescens* auct.

583/1. BALLOTA NIGRA L., var. BOREALIS (Schweig.).
"*Marrubii albi nova Species, vel saltem Varietas.* On the Common near Tunbridge Wells, Du Bois." Kent.

586/2. TEUCRIUM SCORDIUM L.
"*Scordium.* Mr Ja. Sherard found it growing in the Isle of Ely." See *Cat. Pl. Cantab.* 152, 1660.

586/4. Teucrium Chamaedrys L.
"*Chamaedrys vulgaris* Park. It grows plentifully on ye walls and Ruins of Winchelsea Castle. Found by Mr Sherard." Sussex.

587/1. Ajuga reptans L.
"*Bugula minor et hirsuta.* Found in Stokenchurch woods by Mr Rand." Either in Oxon or Bucks.

587/4. Ajuga Chamaepitys Schreb.
"*Chamaepitys vulgaris* Park. About Roe hill in Kent."

588/3. Plantago maritima L.
"*P. marina*, this grew about Chester."

588/8. Plantago lanceolata L., var. sphaerostachya Roehl.
"*Plantago trinervia.* Brought from the sea side in Sussex by Mr Stonestreet. He thinks it to be Gasper Bauhines."

588/10. Plantago major L., var. minima DC.
"*Plantago latifolia minor et hirsutior foliis dentatis.* Found by Mr Rand near the Town." This is probably the plant referred to in the "Flora of Middlesex," p. 229, as "a small form with larger hairy leaves and slender spikes." It seems to be a distinct variety although I have provisionally placed it under De Candolle's *minima*.

595/2. Scleranthus annuus L.
"*Knawel Germanorum erectis.* Found by Mr Rand among Corn by Maidstone."

600/8. Chenopodium album L., var. pseudopulifolium (Murr).
"Gathered in St Georges Fields."

606/2. Atriplex littoralis L.
"*A. angustifolia* D. Buddle. Found at Lynn in Norfolk by Mr J. Sherard." Also "*Blitum maritimum parvum foliis angustissimis.* Found by Mr Manningham near Bosham, 3 miles from Chichester." A small starved form. Also the type from "the Coast of Sussex, Du Bois."

606/17. Atriplex Portulacoides L.
"Gathered at the Oyster-Pits at Fingrego near Colchester." Essex.

606/18. Atriplex pedunculata L. (Obione).
"*A. maritima Halimus dicta* . . . Gathered by Mr J. Sherard, anno 1715 in the Isle of Thanet just by the Ferry to Sandwich." The earliest Kentish specimen.

611/5. Salicornia ramosissima Woods.
"*Kali ramosius, erectum, foliis brevibus, Cupressiforme.* In a Salt Marsh on ye east side of Poole, Dorset. Found by Mr Stonestreet," and the first as British.

611/8. Salicornia appressa Dum., vel S. ramosissima Woods.
"*Kali ramosius, procumbens, foliis brevibus purpurascentibus.* In a little Salt Marsh to ye east of Poole. Found by Rev. Stonestreet." The earliest specimen known.

615/6. **Polygonum scabrum** Moench. (lapathifolium auct.).
"*Persicaria major* D. Bobart. From Mr Stonestreet." Bobart added this plant to the British flora. See Ray *Syn*. 58, 1696.

615/7. **Polygonum Persicaria** L., var. incanum Bréb.
"*Persicaria foliis subtus incanis* Tourn. ex sententia D. Buddle, foliis maculosis subtus caesiis, not in Ray's Synopsis. Found about London. Mr Du Bois."

615/10. **Polygonum mite** Schrank.
"*Persicaria mitis maculosa et non maculosa* C. B." Unlocalised, but one of the earliest examples known of this species.

615/14. **Polygonum aviculare** L.
"*P. brevi angustoque folio* C. B. Pin. 281. Found by Mr Rand on a bank near Camberwell." Surrey.

615/14. **Polygonum aviculare** L., var. marinum S. F. Gray (litorale).
"*An P. Marinum.* Non aliter differre videtur a vulgari, quam surculorum longitudine quadrupedali. On ye shores near Weymouth. Mr Stonestreet." It is a young specimen and may be *P. Raii*. It is the first record of either species for Dorset.

615/14. **Polygonum heterophyllum** Lindman.
"Our broader leaved *Polygonum* at Chiselhurst in 1714. This variety is not mentioned in Ray's 'History' or 'Synopsis'." This plant comes under Syme's var. *vulgatum*.

618/1. **Rumex Hydrolapatheum** Huds. × obtusifolius R. Weberi F.-B.
"*Lapathum maximum aquaticum, sive Hydrolapathum* Ger. Gathered in the river at Bathe. Leaf only." First record for Britain. Mr S. F. Dunn noticed that *Hydrolapatheum* in the Avon above Bath has rather cordate leaves with raised petiole edges. See *Fl. Bristol*, p. 517.

618/6. **Rumex obtusifolius** L.
"Dock eaten by Insects at Upcerne, Du Bois." First record for Dorset.

618/12. **Rumex palustris** Sm.
"*Lapathum longo, angustoque folio* etc. Pluk. Mantiss. p. 112. Unlocalised.

618/16. **Rumex Acetosella** L.
"On the dry banks of the gravel pits on Mitcham Common, Du Bois." A very small form.

628/13. **Euphorbia portlandica** L.
"*Tithymalus maritimus* . . . Found on the narrow neck of land which joins Portland to Dorsetshire [Rev. W. Stonestreet]." In Ray's *Syn*. Dillenius says Mr Stonestreet was the discoverer, and this is therefore a type specimen.

632/1. **Mercurialis perennis** L.
"*M. perennis repens* . . . At Upcerne in Dorsetshire. Du Bois." The first county record. It is a very luxuriant female form.

633/1. **Ulmus montana** Stokes. (U. campestris L.).
"*U. folio latissimo scabro* Ger. Emac. Ray Hist. ii., p. 1426. The Wych-hasel, or Broad-leaved Elm." Also the flowers of an

indeterminable specimen labelled "The Common Elm, *U. folio latissimo scabro* Ger. Emac. 1481."

633/2. Ulmus carpinifolia Borck. — U. glabra Mill. — U. nitens Moench.
"*Ulmus folio latissimo glabro*. N.4 near Danbury in Essex."

633/4. Ulmus Plotii Druce.
"*Ulmus foliis parvis glabris* Buddle. Ye little Wich Elm, a little on this side Maldon. *An Ulmus folio angusto glabro acuminato* R. Plot Hist. Ox. 160 T. 10." Also "*U. folio glabro minor* D. Plot. Hist. Oxon. Surculi novelli asperiusculi, Stonestreet."

633/5. Ulmus sativa Miller.
"*U. vulgaris* Park. The common Elm gathered from the great Elms in my Field at Mitcham, Surrey, with the said excrescences on the leaves in 1714, Du Bois." See Ray *Hist.* ii., p. 426.

633/5. Ulmus viminalis, var. variegata (teste Henry).
"*Ulmus minor folio angusto scabro* Ray Syn. ex sententia D. Rand. The narrow-leaved Elm, with party coloured leaves. Gathered in the Physick Garden at Chelsea, Anno 1715."

641/1. Myrica Gale L.
"*Rhus Myrtifolia Belgica* C. B. Gathered in Sussex near Tunbridge Wells, Du Bois."

646/1. Quercus Robur L.
"Sprigs of an Oak that grew out all white of an old Tree in Stretham Lane, Mr Du Bois." Surrey.

650/7. Salix Smithiana Willd., var. rugosa (Leefe). (S. viminalis × cinerea).
"The bluish Willow. Near Moredon."

650/9. Salix aurita L., forma minor.
"*Salix caprea pumila folio subrotundo*. In the Wood by the Green Man at Dulwich. Mr Isaac Rand." Surrey. Probably the earliest British example. First recorded by Dillenius in Ray *Syn.* 450, 1724. Another sheet from "Norwood in Surrey by Mr Stonestreet."

650/18. Salix herbacea L.
"*Salix pumila rotundifolia, glabra*. From Snowdon, Mr Stonestreet."

654/1. Hydrocharis Morsus-ranae L.
"*Nymphaea alba minima* C. B. Gathered in the River at Bathe." Earliest record for Somersetshire.

667/2. Cephalanthera Damasonium Druce. (C. grandiflora S. F. Gray).
"*Helleborine flore albo* C. B. Gathered on the roadside near Stokenchurch in Oxfordshire." See Ray *Cat.* 339, 1670.

668/1. Helleborine palustris Schrank. (Epipactis).
"*H. palustris nostras* Ray Hist. ii., 1201, 1688. Gathered at Chiselhurst in Kent."

668/2. Helleborine latifolia Druce, agg.
"In Painswick Wood, Mr Bellers." First record of the aggregate plant for Gloucestershire.

668/4. Helleborine purpurata Druce.
"*An Helleborine latifolia montana* C. B. In the woods at Tunbridge Wells." If, as I think it is, correctly identified, it is the first Kentish record, and one of the earliest British examples.

668/5. Helleborine atrorubens Druce. (Epipactis ovalis Bab.).
"*Helleborine altera atrorubente flore* C. B. Found by Mr James Sherard growing at Malham." Yorks. See Ray *Cat.* 187, 1677.

669/3. Orchis Simia L.
"*O. galea et alis fere cinerea* J. B. Mr James Sherard found it growing between Northfleet and Gravesend in Kent." With it is a specimen of O. militaris L. Both species are the earliest specimens known from Kent.

669/4. Orchis ustulata L.
"*O. Pannonica 4 Clusii.* Found by Mr James Sherard . . . plentifully . . . near the Thames between North Fleet and Gravesend." First record for Kent.

669/5. Orchis Morio L.
"Gathered in the fields near Colchester, Essex, Mr Stonestreet."

669/10. Orchis praetermissa Druce.
"Gathered near Upcerne in Dorsetshire, Mr Du Bois." The first record for the county.

669/11. Orchis Fuchsii Druce.
"In ye wood near Upcerne in Dorsetshire, Rev. W. Stonestreet." First record for Dorset.

669/14. Orchis mascula L.
"Gathered near Harwich in Essex, Mr Stonestreet."

672/2. Ophrys sphegodes Mill.
"*Orchis testiculus sphegodes hirsuto flore.* It grows between North Fleet and Gravesend."

674/1. Habenaria Gymnadenia Druce. (Gymnadenia conopsea Br.).
"Gathered at Chiselhurst, in Kent, Mr Du Bois."

676/2. Iris foetidissima L.
"*Xyris* Ger. It grows wild about Black Notley in Essex."

706/2. Scilla autumnalis L.
"It grows plentifully on Blackheath," whence Plukenet recorded it in the second edition of Ray *Syn.* 1696.

713/1. Colchicum autumnale L.
"*Colchicum commune* C. B. Gathered at Everland near Bathe in August 1710." Somerset. See Dodoen's *Herbal* 367, 1578.

718/8. Juncus subnodulosus Schrank.
"*Gr. junceum aquaticum magis sparsa panicula.* From Mr Adam Buddle." Unlocalised, but probably the earliest British specimen.

718/15. Juncus Gerardi Lois.
"*Gr. junceum maritimum vel palustre cum pericarpiis rotundis.*" From Adam Buddle. Unlocalised, and one of the earliest British examples.

735/1. Triglochin maritimum L.
"*Gramen junceum spicatum seu Triglochin.* In the Salt Marshes near Harwich."

737/19. Potamogeton acutifolius Link.
"*An Potamo. fol. gram. canini, caule compresso.* Differre videtur a Ray cujus species major." Unlocalised, but the earliest British specimen. Dillenius, I believe, has added the synonym from the *Synopsis* 149, n. 10, which however belongs to *obtusifolius*, while Sherard's specimen representing it in the Dillenian Herbarium is *P. mucronatus.*

737/20. Potamogeton obtusifolius Mert. & Koch.
"*Potamogeton* at ye simpling feast, 1705." The earliest British example. Also "*Potamog. folio gramineo* N. D. On hunslow heath D. Doody." First Middlesex record, and not given in the "Flora" for Hounslow.

737/22. Potamogeton mucronatus Schrad. (Friesii).
"*Potamog. folio gramineo, caule compresso* D. Dale. Found by Mr James Sherard in Cambridge River." This is probably the Pondweed alluded to on p. 124 of the *Cat. Pl. Cantab.* of 1660.

737/29. Potamogeton interruptus Kit.
"*Potamogeiton maritimum grandiusculis capitulis, capillaceo folio nostras* Pluk." Unlocalised. Probably the first British example.

740/1. Zostera marina L., var. angustifolia Hornem.
"*Potamogeiton marinum.* Ray Syn., p. 346. Found by Mr James Sherard in the Isle of Shepey in the Ditches near Shelness." First Kentish record and the variety new to the Kent Flora.

745/3. Eleocharis multicaulis Br.
"*An Juncello accedens graminifolia Plantula capitulis Armeriae proliferae* D. Llhwyd Ray Syn., p. 75. Gathered near Tunbridge Wells in Kent, Du Bois." The first British record. Ray's plant was *Scirpus pauciflorus.* See the Morison Herbarium. There is also an unlocalised specimen collected by Buddle.

746/5. Scirpus triqueter L.
"*Juncus acutus maritimus caule triangulo* C. B. Gathered on the Thames side near Peterborough House." Also "*Juncus acutus maritimus caule triangulo* C. B. By the Thames," whence it was first recorded by Merrett in 1666. Also "*Juncus maximus caule sulcato.* Limehouse, Mr Stonestreet."

746/8. Scirpus pauciflorus Lightf.
"*Juncello accedens*, etc." In Bobart's writing. One of the earliest examples of a species which Lhwyd discovered in Carnarvonshire.

746/13. Scirpus fluitans L.
"*Juncus capitulis equiseti minor et fluitans.*" From Adam Buddle. Unlocalised. First recorded in Ray *Hist.* 1305, 1688. Also with a wrong identification from "Wandsworth Common." Surrey.

747/1. ERIOPHORUM PANICULATUM Druce. (LATIFOLIUM Hoppe).
"*Linagrostis panicula minore* Tourn. 664. From Mr Stonestreet." Probably the earliest British example.

753/3. CAREX ACUTIFORMIS Ehrh.
"*Gr. cyp. majus angustifolium* Ray Hist. 1293, 1688." Probably the earliest record.

753/10. CAREX PENDULA Huds.
"*Gr. spica pendula longiora* Park. Notley near Braintree in Essex, Du Bois," where it is still plentiful.

753/12. CAREX STRIGOSA Huds.
"*Gr. cyp. polystachion majusculum latifolium, spicis multis, longis, strigosis.* Du Bois." First recorded in Ray Syn. 265, 1696.

753/13. CAREX HELODES Link. (LAEVIGATA Smith).
"A variety of the *Gramen Cyperoides spicis longe distantibus* with longer Spikes, found in the Boggy grounds about Tunbridge Wells." The first British record, and probably from Sussex.

753/15. CAREX BINERVIS Sm.
"*Gr. cyp. spicis parvis longissime distantibus Varietas, altitudine pedali aut longiore, caule tenui, foliis angustis, e quorum alis spicae seminiferae duae, tresve breves et habitiores, vel sessiles in foliorum alis, vel pediculis brevibus innixae. Caulem spica simplex terminat* Ray Syn. 266, 1696, Du Bois." Unlocalised. In the *Synopsis* this plant is said to grow in "prato quodam juxta lupuletum Danfeldiae in Essexiae," and this is the earliest British record.

753/20. CAREX FLAVA L., probably crossed with C. FULVA Host.
"*Gr. palustre aculeatum Italicum vel majus* C. B. Pin. ex sententia D. Buddle. Found near Hooknorton in Oxfordshire, Mr Bellers."

753/32. CAREX PILULIFERA L.
"*Gr. cyp. spicis brevibus congestis, folio molli.* From Adam Buddle." It was first found by Samuel Doody and recorded in Ray Hist. ii., 1910, 1688.

753/33. CAREX DIVERSICOLOR Crantz. (GLAUCA).
"Differre videtur a *Gr. cyp.* [Syn.] p. 264, n. 4, spicis longioribus et plerumque nutantibus. Found by ye banks of the New River by Mr Miller."

753/53. CAREX LEPORINA L.
"*Gr. cyp., spica e pluribus spicis brevibus mollibus composita.* Ray Hist. 1296, 1688." that being the earliest record.

753/57. CAREX AXILLARIS Good. (REMOTA × VULPINA).
"*Gr. cyp. angustifolium, spicis parvis sessilibus in fol. alis, insignis varietas si non distincta species* Buddle." A type specimen from its discoverer.

753/62. CAREX DIVULSA Stokes.
"*Gr. cyp. spicatum minus, spica longa, divulsa seu interrupta,* Ray Hist. ii. 1297, 1688. From Mr Stonestreet." Ray's is the earliest record.

753/67. CAREX ARENARIA L.
"*Gr. cyp.* ex monte Ballon, *simile maritimum.* Adam Buddle." First recorded in Ray Hist. ii. 1297, 1688.

753/68. CAREX DIVISA Huds.
"*Gr. cyp.* ex monte Ballon, *spica divulsa*, Ray Hist. 1696, ex Ins. Shepey, Adam Buddle." Du Bois adds that it "grows at ye Hithe at Colchester in Essex." Also "*Gr. cyp.* ex Monte Ballon, *spica divulsa,* A. Buddle. In the meadows near the Hithe at Colchester in Essex." The classic locality. See Ray *Hist.* ii., 1296, 1688.

758/2. SPARTINA STRICTA Roth.
"*Gr. sparteum spicatum dactyloides* near Fambridge Ferry in Dengey hundred plentifully." Essex. The label is in Buddle's hand. See Ray *Syn.* 393, 1724.

784/1. GASTRIDIUM VENTRICOSUM S. & T. (LENDIGERUM Gaud.).
"A Grass found wild in the Garden, 1719, Du Bois." ? at Mitcham, Surrey.

790/1. WEINGAERTNERIA CANESCENS Bernh. (CORYNEPHORUS).
"*Gr. pumilum hirsutum, spica purpureo-argentea molli.* From Adam Buddle," who added it to the British flora from Suffolk. See Petiver *Conc. Gram.* 126, 1716.

791/4. DESCHAMPSIA FLEXUOSA Trin.
"*Gr. paniculatum, locustis parvis purpureo-argenteis, majus et perenne.* From Adam Buddle." First differentiated by Samuel Doody. See Ray *Syn.* 258, 1696.

794/2. AVENA PUBESCENS Huds.
"*Gr. avenaceum, panicula purpureo-argentea splendente* D. Doody," who was its discoverer. This specimen is of Du Bois' collecting.

794/3. AVENA PRATENSIS L.
"*Gr. avenaceum montanum, spica simplici artistis recurvis.* See Ray Hist., p. 1290. From Mr Buddle," who added it to the British flora from near Barlow (Bartlow) in Essex. Also "from the borders of the fields between Newmarket and Exning."

808/2. CYNOSURUS CRISTATUS L.
"*Gr. minimum, spica brevi habitiore nostrum*, Ray Syn. 184, 1690. Gathered near Tunbridge Wells, Kent." On the same sheet are specimens of *Aira praecox* L. and *Festuca bromoides* L., the two latter being first county records. The specimens of *Cynosurus* are dwarf, bleached forms.

814/1. CATABROSA AQUATICA Beauv.
"*Gr. paniculatum aquaticum miliaceum.* About London frequently," whence Lobel recorded it in the *Stirpes Illustrationes* in 1655.

824/7. POA NEMORALIS L.
"Gathered at Chiselhurst, anno 1714, Du Bois." First Kentish record.

824/10. **Poa compressa** L.
"*Gr. paniculatum pratense medium, culmo compresso. It* flowers late, ye stalk always flat and ye glumes more elegantly squamated than ye common." A type specimen of the grass which Buddle first differentiated in Britain and which he gathered at Maldon in Essex. See Petiver *Conc. Gram.*, n. 130. On the walls about Eltham in Kent for which it is the earliest record.

825/5. **Glyceria maritima** Wahl.
"*Gr. marin. paniculat.* D. Dale. From Mr Stonestreet." Unlocalised.

825/7. **Glyceria Borreri** Bab.
"*Gr. paniculatum maritimum vulgatissimum.* From Mr Stonestreet." The name refers to *G. maritima* Wahl., but the specimen is the earliest British example known of *G. Borreri.*

826/2. **Festuca gigantea** Vill.
"*Gr. avenaceum glabrum, panicula e spicis raris strigosis composita, aristis tenuissimis,* Fulhamiae prope Londinum observavit D. Doody." First discovered in Britain by Doody. See Ray *Hist.* ii., 1909, 1688.

826/3. **Festuca arundinacea** Schreb.
"*Gr. paniculatum nemorosum latiore folio,* etc. Ray Syn. 411, n. 15, 1724. Found near Dover by Mr Rand and Mr Sherard." Type specimen and the first Kentish record. Also "*Gramen arundinaceum aquaticum, panicula Avenacea* D. Doody." Added to the British flora from the Thames between London and Chelsea. Recorded in Ray *Hist.* ii., 1909, 1688.

826/4. **Festuca adscendens** Retz.
"*Gr. Loliaceum majus spicis rarior dispositis* from Buddle." Du Bois says "he finds it not in the Dillenian Ray." The grass is a hybrid of *Lolium perenne* and *Festuca elatior.*

826/7. **Festuca rubra** L., forma.
"*Gr. pratense, panicula duriore laxa, unam paecipue partem spectante,* Ray Hist., p. 1285. From Mr Buddle." Unlocalised. Ray's is the first British record for this species.

827/17. **Bromus commutatus** Schrader = **B. pratensis** Ehrh.
"*Festuca Avenacea, spicis strigosioribus e glumis glabris compactis.* From Buddle." First observed by S. Dale, and recorded in Ray *Hist.* ii., 1907, 1686.

829/2. **Lolium temulentum** L., var.
"*Gr. loliaceum, locustis brevibus, densioribus.* Found near Wandsor in Surrey, Mr Stonestreet."

830/1. **Agropyron junceum** Beauv.
"*Gr. caninun maritimum spica crassa.* Crescit in littore Sufolciensi, D. Buddle." This is the earliest authentic specimen known as it is not quite certain whether the plant in Johnson's *Itin. Cant.* 23, 1632, is this species.

830/2. **Agropyron pungens** Roem. & Schultes.
"*Gr. caninum maritimum, spica loliacea nostras* Adam Bud-

dle." A type specimen and the earliest known. See Ray *Hist.* ii., 1256, 1688.

830/6. Agropyron caninum Beauv.
"*Gr. caninum aristatum, radice non repente* Habui a D. Bobart." Bobart first recorded it as British from Stokenchurch woods, Oxon and Bucks. See Ray *Syn.* 235, 1690.

844/2. Equisetum arvense L.
"In the ditches about Bathe." Somerset. Also "*Equisetum* with the stalk half naked, gathered at Mitcham in General Harveys field near the River, all the place was full of the same sort." Surrey.

844/3. Equisetum sylvaticum L.
"*Equisetum minus tenuifolium procumbens, non descriptum.* Found by Mr Stonestreet upon Hitcham Common." Earliest record for Bucks.

845/1. Cryptogramma crispa Br.
"*Adiantum album floridum.* In Agro Westmorlandico ad muris et in Rupibus Montis Snowdon provenit. From Mr Stonestreet." Also "*Adiantum album floridum*, from Snowdon."

847/1. Eupteris aquilina (L.) Newm. (Pteris).
"*An Filicis foemina varietas.* From Dorsetshire, Mr Stonestreet." The first record for that county.

848/1. Adiantum Capillus-veneris L.
"*Adiantum fol. Coriandri verum.* Found by Mr Lhwyd at St Ives, Cornwall, and Isle of Arran, near Galloway." The earliest record for Ireland. One label is in Bobart's writing. See *Phil. Trans.* 1710.

850/1. Phyllitis Scolopendrium Newman.
"*Phyllitis*, at Upcerne in Dorsetshire, bifid form. Another bifid form "non det.," found by "Vernon at Great Braxted in Essex." "*Lingua Cervina maxima, undulato folio, auriculato per basin* Cat. Hort. Reg. Paris 108. *Phyllitis crispa* J. B. Ray Hist. App. 134. The Honourable Capt. Charles Hatton some years since told me he had seen many curious varieties of this plant in the Royal Garden at Paris in Morin's time ye famous Florist, who assured him he had raised them all from the seed of the Common Hart's Tongue, Mr Petivers acct. of rare plants etc. Phil. Trans., vol. 28, p. 33." Interesting as showing that they then knew it could be propagated from spores.

851/2. Asplenium Trichomanes L.
"*Trichomanes* Park. Gathered on the rocks near Bathe. Du Bois." Somerset.

851/5. Asplenium Adiantum-nigrum L.
"*Adiantum nigrum, segmentis foliorum angustioribus.* Raii Syn. p. 51. Found in a shady lane near Mitcham in Surrey." The type "in sandy lanes going to Bathe. Du Bois." Somerset.

854/1. Polystichum setiferum Woynar. (angulare Presl).
"*Filix mas pinnulis spinosis, auriculatis, minimis.* In ye Lanes near Baleys in ye Parish of Shirminster-Marshal in Dor-

setshire." First record for the county. Also "*Filix tenuissima secta* Monte Bal. J. B. Found near Newberry, Mr Bobart." First record for Berks. See *Fl. Berks* 608, 1897.

854/4. **POLYSTICHUM LONCHITIS** Roth.
"*Lonchitis aspera major* Ger. Gathered by Dr Richardson on Snowdon," also from the same place from "D. Wynne." Carnarvonshire.

856/1. **DRYOPTERIS FILIX-MAS** Schott, var. **AFFINIS** Newm.
"*Filix mas . . . magis incisis* Buddle. In sylvis juxta Henley in agro Suffolk." First record for the county, for which this variety is not given in the flora. Also from "Charlton Wood, Kent, Mr Buddle." Seedlings "from Tunbridge Wells, Kent."

856/4. **DRYOPTERIS ARISTATA** Druce.
"Gathered on the Rocks near Tunbridge Wells, Du Bois." First Kentish record. Also a specimen from Jacob Bobart.

856/9. **PHEGOPTERIS POLYPODIOIDES** Fée.
"*Filix montana, pinnulis imis deorsum spectantibus.* North Wales." See Ray *Hist.*

856/11. **PHEGOPTERIS ROBERTIANA** A. Braun. (**CALCAREA** Fée).
"*Filix minor ramosa* J. B. In a wood by Painswick, four miles by Gloster, Mr Bellers." The earliest Gloucestershire record.

858/1. **POLYPODIUM VULGARE** L., var. **SERRATUM** Milde.
"*Polypodium murale, pinnulis serratis,* D. Manningham, on Windsor Castle." See Ray *Syn.* 117, 1724. First record for Berks. Also type plant, "*Polypodium pinnulis longioribus acuminatis.* Found at the entrance of Over [Iver] Heath on the way thither from Hillingdon in some hedges." First record for Bucks.

862/1. **TRICHOMANES RADICANS** Sw.
"Sent by Dr Richardson to Consul Sherard for a new sort. Dr Richardson discovered it at Belbank near Bierly, Yorkshire, and it is included, on p. 127, in the *Synopsis* of 1724.

864/1. **OSMUNDA REGALIS** L.
"A variety of *Osmunda Regalis*, gathered near Bromley in Kent, anno 1714. A form with sori on some of the upper fronds." First record for Kent.

869/1. **ISOETES LACUSTRIS** L.
"*Subularia lacustris.* Snowdon, D. Wynne," ex Mr Stonestreet.

870/6. **LYCOPODIUM INUNDATUM** L.
"*Muscus terrestris repens* . . . On Hampsted and Bagshot Heath." Recorded for Hampstead by Ray in the *Catal.* of 1670 as new to Britain.

876/3. **CHARA VULGARIS** L.
"*An Hippuris lacustris* Buddle. Near Chiselhurst." First record for Kent.

CRYPTOGAMS.

FUCUS VESICULOSUS L. ?
"Gathered on the shore at Deal in Kent by Mr A. Brown, 1698/9."

FURCELLARIA FASTIGIATA Lam.

"*An Fucus teres villis quaquaversam obductus* Doody. Gathered on the shore of Deal in Kent by Mr Alex. Brown, 1689 9."

HALOPITHYS INCURVA Batt. (PINASTROIDES).

"Gathered on the shore at Deal in Kent, 1698/9, Mr Alex. Brown," and "*Muscus marinus capillaceis niger* . . . Found by Mr Dandridge on ye coasts of Essex."

POLYIDES ROTUNDUS Grev.

"*Fucus confervoides lendiginosus seu Cuscuta marina* Raii Syn. Brought from ye Isle of Sheppey in Kent by Mr Doody."

CLADOSTEPHUS SPONGIOSUS Agardh.

"*Muscus maritimus hirsutus flagellis ramosis subviridibus* Hist. Ox., p. 3, s. 15, t. 9. In litore Cornubiensi collectum accepi a D. Stephens. At Harwich, S. Dale."

GELIDIUM CORNEUM Lam.

"Found on the shore of Portland or Weymouth in Dorsetshire by Mr Miller."

POLYSIPHONIA NIGRESCENS Grev.

"*Muscus marinus ramosissimus et tenuissimus niger.* Found by Mr Dandridge on ye coasts of Essex."

POLYSIPHONIA ELONGATA Grev.

"*Fucus angustissimus ramosus, non dichotomus.* Found by Mr Rand on ye śhoars at Dover."

LAURENCIA PINNATIFIDA Lam.

"Found on ye shores of Portland or Weymouth in Dorset, Mr Miller."

[GRACILARIA sp. Maryland, Dr Kreig, 1698.]

CERAMIUM RUBRUM Agardh.

"Gathered on the sea shore at Harwich." Essex.

HALIURUS EQUISETIFOLIUS Kütz.

"*Fucus teretifolius spongiosus parvus*, Raii Syn. 4, n. 11, 1696. Gathered on the shore at Deal by Mr Alexander Brown."

CALLIBLEPHARIS LANCEOLATA Batt. (JUBATA).

"*Fucus membranaceus fistulosus purpureus hispidus.* Hunc in litore Cornubiensi collectum accepi a D. Stephens."

DICTYOTES DICHOTOMA Lam.

"*Lichen marinus* . . . Referimus ad litora Cornubiae implicitus."

BATRACHOSPERMA MONILIFORME Agardh.

"*Conferva fontana nodosa* . . . Ray Syn., p. 62, n. 26, 1724, from D. Dillenius."

CLADOPHORA GLOMERATA (L.).

"*Muscus marinus ramosissimus et tenuissimus viridis.* Found by Mr Dandridge on ye coasts of Essex."

ENTEROMORPHA INTESTINALIS Link.

"*Lichen marinus tubulosus* . . . On ye shores of Poole Bay towards Lower Liche. On the shores of Portland Bill, Mr Stonestreet."

CHAETOMORPHA AERA Kütz.

"*Conferva marina geniculata.* On ye coasts of Essex, Mr Dandridge."

CHONDUS CRISPUS. ?

"*Alga crispa* . . . Sheppy." Kent.

EURHYNCHIUM MYOSUROIDES Schimper.

"Gathered off ye oaks in Wallington Common in Surrey, Du Bois."

HYPNUM CUPRESSIFORME L.

"Gathered near Tunbridge Wells, Kent. Wallington Common in Surrey."

PORELLA PLATYPHYLLA Lindb. (MADOTHECA).

"Stokenchurch, Bobart." Oxon and Bucks.

TRICHOCOLEA TOMENTELLA Dum.

"*Muscus Filicinus perelegans crispatus* D. Dandridge Mus. Petiv. No. 438. Highgate and Hornsey interjacente. In the woods near John Coles in Wiccombe, **Kent.**"

BARBULA SUBULATA (Hedw.).

"Stretham Lane, Feb. 6. *Muscus trichoides minus* . . . Ray Syn. 243, 1690." Surrey.

TORTULA RURALIS Ehrh.

"Stretham Lane. At ye foot of ye old Apricot in ye Codling Garden, Du Bois." Surrey.

ORCHID-HUNTING IN FRANCE.

By Rev. T. STEPHENSON, D.D.

(*N.B.*—It should be premised that by *Orchis maculata* I mean the same as *O. Fuchsii* Druce, and by *O. elodes* the same as *O. maculata vera* (Druce) = *O. maculata*, sub-sp. *ericetorum* Linton).

In June of the years 1924 and 1927 I had two very interesting visits to France in search of orchids, and have pleasure in here recording some notes of the groups of plants met with and their distribution.

In the Charente region I stayed at the charming house of M. J. Delamain, finely situated in the country near Jarnac. In the lawn close to the house Lizard orchids are growing, and they are to be found in fair numbers by the roadsides in the neighbourhood. Under the fir trees near the house are the tall bushes of *Erica scoparia*, *Arenaria montana* and splendid spikes of Asphodel. Lower down are the handsome *Lathraea clandestina*, *Phalangium planifolium*, *Equisetum ramosum* and a small colony of *Orchis elodes*. In the open ground and meadows not far away, a great many orchids flourish. *O. mascula*, *morio* and *laxiflora*, with the hybrid of the two last quite frequently, and that of the former two occasionally, *O. maculata*, *militaris*, *Coeloglossum viride*, *Platanthera chlorantha*, *Serapias lingua* and *occultata*, *Anacamptis pyramidalis*, *Ophrys apifera* and *scolopax*, with the hybrid between them rarely, *Aceras anthropophora* in plenty, a buff-coloured form, and a most amazing abundance of *Ophrys aranifera*. Occasionally in the district the variety of *Ophrys apifera* with an emerald-green pouch is met with. The purpose which originally attracted me to the Charente region was to see a very fine colony of *Orchis sesquipedalis* which grows in an extensive marsh formed by the "gouffre" called Les Tards, a deep and powerful spring welling up from the chalk, which keeps the marsh in a fairly even condition of moisture all the year round. A full account of this orchis was given in *Journ. Bot.* of April, 1925. It is the finest of the South-European Marsh Orchids, only to be excelled by the splendid *O. Munbyana* of North Africa. This year another visit was paid to the marsh, when the plants were about at their best. Other orchids in the marsh are *O. incarnata* and *O. laxiflora*, and *Gymnadenia conopsea*. The hybrid of *O. sesquipedalis* and *O. incarnata* occurs, and has been named by Dr Keller × *O. Delamainii*. We searched diligently for a possible hybrid of *O. sesquipedalis* and *O. laxiflora*, but without success. Near Gensac we traversed some very large marshes, where two years ago *O. palustris* grew in thousands, pale purple, pink and white. But this year, owing to the growth of the sedge, the greater number of the plants were temporarily smothered. We found one fine hybrid of *O. laxiflora* with *O. palustris*. Here *O. laxiflora* was also abundant, but nearly over. In these fens, with their dense growth of sedge, cut down about once in three years, the orchids have to struggle against great difficulties, and their power of recuperation is remarkable.

Of plants in this district other than orchids the following may be mentioned:—*Adonis aestivalis*, *Biscutella laevigata*, *Dianthus Carthusianorum*, *Althaea hirsuta*, *Linum gallicum* and *suffruticosum*, *Ornithopus compressus*, *Coronilla minima*, *Lathyrus niger*, *angulatus* and *canescens*, *Astragalus monspessulanus*, *Tetragonolobus siliquosus*, *Dorycnium pentaphyllum*, *Bupleurum aristatum* and *fruticosum*, *Helychrisum Stoechas*, *Carduncellus mitissimus*, *Campanula Rapunculus* and *linifolia*, *Convolvulus cantabrica*, *Linaria Pelliseriana*, *Melampyrum cristatum*, *Orobanche Picridis* and *epithymum*, *Euphorbia palustris* and *Muscari comosum*.

The greater part of Charente and Charente Inférieure constitute the region in which alone Cognac brandy is produced. This region is divided into seven areas, from which various grades are named, and of these the best, which gives "Fine Champagne," is a small district, of which Cognac and Jarnac stand at the northern boundary. The brandy is produced by simple distillation of the grape-juice, without any admixture of other ingredients. It is matured in casks of French oak, from the tannin of which it gets its colour. Owing to the ravages of Phylloxera, the whole of the vines are now raised by grafting from American stock. There are weaknesses incident to the grafting process, and many experiments are being made with a view to producing a satisfactory stock without its aid, but hitherto without success.

We went for a more extended run by motor to the coast at Royan. On the way, at Talmont, there was seen a pretty group of *O. palustris*, and, by the sea, bushes of *Atriplex halimus*. At Royan there are some fine trees of *Elaeagnus angustifolius*, and by the shore at Pontaillac, *Convolvulus lineatus*. From Royan we went into the Forêt de la Coubre, a small northern extension of the dune formation of the Landes, which extend south of the Garonne estuary. This whole region is now planted with *Pinus maritima*, and an extensive industry is conducted in the manufacture of resin. A narrow strip is cut in the bark of the fir, and the resin collected in small tins. The cutting is so managed as to yield resin for several years without much interfering with the growth of the trees. Here by the roadside we found *Helianthemum guttatum* and quantities of the beautiful *Cistus salviaefolius*, also *Cynoglossum pictum*, the curious *Ephedra equisetiformis*, and on the shore, *Linaria thymifolia*. But the sight of sights was *Cephalanthera rubra*, covering the ground under the fir trees in great rosy sheets, almost as closely packed as bluebells in an English wood. *Cephalanthera ensifolia* is equally plentiful on the ground, but when we were there, in early June, it was out of flower. On the return journey, more to the north, we found a fine collection of orchids which included many hybrids of *O. laxiflora* and *palustris* and, especially near Saujon, more groups of *O. sesquipedalis*.

M. Delamain and his son, M. Jean Delamain, have an excellent knowledge of the plants of the whole district, and it was by their kindness that I was able to visit all the best localities within a very short space of time.

This summer, by the kindness of M. L. d'Albis, of Limoges, we had a fine run through practically the whole Tarn valley and the Cévennes. Going by train from Cognac to Limoges, we passed through the forest region of La Braconne largely consisting of a sort of open scrub, where there are still wild boars and a few wolves. Running by car south from Limoges, we saw *O. elodes* in plenty in a damp meadow, with *Genista sagittalis*, which is fairly wide-spread. In a damp meadow south of Cahors, we found large numbers of *O. ambigua* Martr., which was the main object of our expedition. It was growing along with *O. incarnata*, and we found one or two hybrids. M. Martrin-Donos in his "Florule du Tarn" described this plant as a new species, but expressed a doubt as to whether it was a hybrid between *O. maculata* and *incarnata*. However, in the two stations where we found it, neither species of Spotted Orchis was to be seen. In any case, there can be no doubt that the plant is a variety of *O. sesquipedalis*, and it is so recorded by Rouy and Briquet. In comparison with the type form, as seen at Jarnac, it has narrower spikes with very divaricate bracts, but otherwise is very similar; also the lips are flat, whilst in the Jarnac form they are nearly always strongly recurved.

Between Moissac and Montauban the roadside was adorned by many fine spikes of Lizard Orchis, of which we saw nothing more during the rest of the tour. From Montauban we went to Lisle, on the Tarn, the station from which Martrin-Donos described *O. ambigua.* Here, by the river-side, in damp runnels from the high bank above, we found the orchis in fair numbers, precisely the same as in the Cahors station. From Lisle we went through Albi to Millau, passing through a district in which mulberries are grown. From Millau we went through the splendid gorges of the Jonte and Tarn, passing over the Causse Méjean which divides them. It is a great plateau of Jurassic limestone, of about three thousand feet elevation, treeless and waterless. In the "causses" there are some very fine caverns, and swallow-holes, "avens," such as are found in Yorkshire. Numerous dolmens bear witness to a considerable population in prehistoric times. These grey, barren, undulating wastes are unlike anything I have seen elsewhere. Notwithstanding the aridity, plenty of plants are to be found, low-growing and often stunted, such as *Herniaria incana*, *Sideritis Scordioides*, *Veronica Teucrium*, *Onosma Echioides*, *Iberis pinnata*, and *Asperula arvensis.* Flocks of sheep find scanty nourishment from the stunted, rather aromatic herbage, and from their milk is made the famous Roquefort cheese. Rare plants of the causes which I had not the fortune to see are *Adonis vernalis*, *Saponaria bellidifolia*, *Alsine lanuginosa*, *Armeria juncea*, *Arenaria lesurina*, *A. hispida*, *Teucrium Rouyanum* and *Euphorbia papillosa.* Characteristic trees are *Pinus silvestris* and evergreen oak, but they are much less frequent than formerly.

Coming down again to the Tarn at St Enimie by an alarmingly steep and twisting road, we spent some time at La Caze, a perfect little mediæval château near Malène. By the river-side were found *O. coriophora* and *militaris*, *Limodorum abortivum* and a colony of pretty *O. maculata*, the only one which we found along the Tarn valley, or anywhere south of Limoges, all the other Spotted Orchids, of which we saw very large numbers here and there along the whole run of 1200 kilometres, being *O. elodes.* Other plants at La Caze and along the upper Tarn are *Dianthus deltoides* and *caryophyllus*, *Cytisus sessilifolius*, *Anthyllis Vulneraria* of a pretty pink colour, *Campanula persicaefolia*, *Daucus maximus*, *Aster alpinus*, *Centaurea pectinata*, *Helychrisum Stoechas* in plenty, *Orobanche cruenta*, *Melittis melissophyllum* of a rich rose-red I have never seen elsewhere, *Plantago arenaria*, *Ruta angustifolia*, *Asparagus tenuifolius* and *Aphyllanthes monspeliensis.* Climbing up to the causse above, a part of the Causse Sauveterre, we noted *Colutea arborescens*, *Scrophularia canina*, a belt of *Lavandula spica* and, on the top, a fine array of *Lychnis Viscaria* in splendid flower, *Vicia Onobrychoides*, *Lactuca perennis* and *Saponaria caespitosa.* Of this last we saw a good deal, here and there, making a fine show on rocks and walls.

Leaving La Caze and going up into the Cévennes, approaching Pont-de-Montvert, we found a number of plants of *O. elodes* of a richer, darker purple than usual. Passing through that beautifully situated little town, famous for its associations with the Camisard revolt, we lighted upon a lovely alpine meadow where grew *Narcissus poeticus*, *Gentiana lutea*, *Veratrum album* not yet out, with *O. coriophora*, *ustulata* and *morio*. Some way further on, leaving Saugues, we passed a similar meadow full of *Narcissus*, with *Trollius europaeus*, *Ranunculus aconitifolius*, *Gentiana lutea*, *Veratrum album* and a fine dark purple Pansy in thousands. After this, many fields white with *Narcissus* were seen and quantities of *O. elodes*. The way now lay northwards, towards Le Puy, and in the whole of this part of the journey everywhere the country was alight with mile after mile of dwarf broom (*Sarothamnus purgans*) and various Genistas (*G. cinerea* and *anglica*). In the Cévennes we had also seen a great many woods of Sweet Chestnut (*Castanea sativa*), growing rather short and gnarled, like English oaks. Leaving Bort we passed a fine array of *Doronicum Pardalianches*, growing in dark rocks under trees above the road. Other plants noted were *Roripa pyrenaica*, *Alchemilla alpina*, *Phyteuma spicatum*, *Linaria striata*, *Ajuga pyramidalis*, *Ferrula ferulago*, and, here and there, great quantities of *Armeria plantaginea*. Two or three times we found, to our surprise, *O. mascula* still in flower.

Not far from Marcenat, in Cantal, we passed some wet fields crowded with *O. latifolia*, which we saw nowhere else on this tour, or in the Charente region. It is of a very handsome type, having broad leaves heavily spotted with crimson marks, and dark purple flowers having a looped pattern of darker purple, the bracts often very large, and suffused with purple. Here also were *O. elodes* and *O. incarnata*, the latter of a bright purple, coming very near to the var. *pulchella* Druce. There were some hybrids of *O. latifolia* with both of the other species. Here *O. latifolia* far exceeded the other species in numbers, and no one who saw it would set it down as a hybrid. In appearance it comes very near to plants which I have received more than once from Aix-les-Bains, sent by Col. Godfery.

On the rest of the way back to Limoges we saw little to record. *O. elodes* was frequently seen. On the plateau of Millevaches we scanned very many marshy fields which might have contained Marsh Orchids, but saw none.

To add a little further evidence as to the distribution of Orchids, I may say that in June 1926. I explored a fairly large part of Asturias, in Northern Spain. Here, in a narrow belt between the Cantabrian Mountains and the Bay of Biscay, there is a moist and temperate climate which is very similar to that of England. I found *O. elodes* in plenty in the upland meadows and, at one level, *O. maculata*. In one place, at about 2500 feet, *O. incarnata*, of a purple variety, was growing. One Marsh Orchis was very plentiful, belonging to the *sesquipedalis* group. It has somewhat smaller heads than either of the French types, and smaller bracts. It seems to be the same as *O. incarnata*, γ *ambigua*, of Guimarães, and is discussed in *Journ. Bot.*, April 1928, where I have re-named it as *O. sesquipedalis*, var. *iberica*.

On both trips I did a little botanising near Paris, chiefly in order to find out whether *O. praetermissa* occurs in France. I visited four stations north of Paris, in three of which I saw it. In a small marsh near Isle Adam were *O. maculata*, *incarnata*, *militaris* and *latifolia*, and

O. praetermissa more numerous than any. I noted *Calendula arvensis* in plenty in a field by the way. In moist meadows near Coye were *O. praetermissa* and *latifolia* in about equal numbers, and here I could find no Spotted Orchis. In a wood near by was *Limodorum abortivum*. In an extensive and thickly overgrown fen near Arronville, chiefly around the edges were *O. praetermissa* and *maculata* in great numbers, with some *O. latifolia*, *militaris* and *incarnata*. On limestone near Vallangoujard were *Ophrys arachnites*, with very open pouches, *Gymnadenia conopsea* and *Himantoglossum loreum*. On the way, *Specularia speculum*, *Melampyrum arvense* and *Euphorbia Cyparissias* were conspicuous. *Cirsium oleraceum* was abundant in the fen. Except for the presence of *O. militaris*, these groups of orchids were exactly similar to what one finds in many parts of England. About eighty kilometres south of Paris, I explored the marshes between Souppes and d'Ordives, where I fully expected to find *O. praetermissa*. I was not able to cover all the ground in this rich area, but only met with one plant which might have been *O. praetermissa*. Here *O. latifolia* and *O. maculata* are very plentiful, with *O. palustris* in small numbers. *O. maculata* is of a pale type, some plants being pure white. *O. latifolia* is taller and with narrower leaves than the form found near Marcenat, but the flowers are very similar. In both cases a few plants with unspotted leaves are found.

A few general notes may bring the paper to a close. *O. praetermissa* is certified, at any rate as far as Paris. South of that city its occurrence is doubtful. *O. incarnata* is not abundant, but it is widely distributed, and does not vary much. The two groups of the Southern Marsh Orchids appear to be confined to the south and south-west respectively. *O. elodes* has a very wide distribution. It was found at Jarnac, and over the whole region traversed south of Limoges. *O. maculata* is equally widespread, but much less plentiful. It was found both north and south of Paris, at Jarnac, and at one place on the upper Tarn. I had been prepared to find a much larger number of segregate forms of the Spotted Orchids in France than in Great Britain, but over the area I traversed this is certainly not the case. I am strongly inclined to think that some of the forms that are named as varieties are nothing more than very occasional individual variations of no general significance. For instance, near Isle Adam I found a single plant which came very near to the drawing of *O. elodes* in Camus' " Iconographie des Orchidées de l'Europe," but it is not at all representative of the species. Again, south of Limoges, in a field where there were a great many plants of the ordinary type of *O. elodes* and nothing else, I found a plant with large, lanceolate bracts, and very broad lower leaves, the lowest petioled, really looking very like the leaves of *Platanthera chlorantha*. This form might easily be described as a new variety, but I do not think the procedure would be justified. As far as my explorations go, there are two types, and two only, of the Spotted Orchids, namely *O. maculata* and *O. elodes*. No doubt there are others, further to the east, but I speak of the western regions known to me.

SOME KENT AND SURREY BRAMBLES.

By Wm. Watson.

(The numbers against the names of the Brambles are those in the Second Edition of the British Plant List.)

There is a beautiful bramble on Wimbledon Common, Abrook and Littleworth Commons and in many localities thence to Cobham. Watson sent it long ago to Boreau as *R. rosaceus*; Wolley-Dod more recently to Sudre. After being called, in turn, *R. rosaceus* and *R. Babingtonii*, var. *phyllothyrsus*, it has latterly been known as *R. festivus*. It has been met with by French botanists in various scattered localities in the north of France and has been known to them sometimes as *R. rosaceus*, sometimes as *R. Lejeunii*. Sudre came across Watson's specimen amongst others of French origin in Boreau's herbarium and described and named it as *R. blandulus*, only to find subsequently that Lefèvre and P. J. Mueller had already described and named it as *R. formidabilis*. R. ANDERSONII Lef. (103) is an anterior name given to it by Lefèvre in manuscript descriptions, n. 49 and 53 (see *Bull. Soc. Bot. Fr.* xxiv., 218 and 222); and it is by that name, I think, that the bramble must be called. The stem is sharp-angled, subsulcate, thinly, inconspicuously villose, with hardly any stalked glands. Prickles numerous, nearly equal, broad-based, patent, slightly deflexed or falcate, and a few tubercular based prickle-bristles. Leaves 5-nate, yellowish-green, glabrescent above, thinly hairy beneath, with coarse, patent, triangular teeth. Petiolar prickles long, falcate. Terminal leaflet broadly ovate-cordate, cuspidate, twice as long as its stalk. Flowering branch with rather few, light red, stalked glands (some long), villose, and with many strong prickles which are straight, deflexed, falcate or hooked. Panicle broad, pyramidal below, with long ascending branches and long, very prickly pedicels, lax and nearly leafless, thinly villous. Petals broad, bright rose-red, rather large. Calyx hairy and prickly, segments reflexed in fruit. Stamens white or slightly tinged pink, exceeding the flesh-coloured styles. Young carpels glabrous. Receptacle hairy. Fruit abundant, rather large, ovoid. This robust bramble climbs into small trees and uncloses its beautiful blooms towards the middle of July. The whole bramble is relatively glabrescent. The true, extremely prickly *R. festivus*, on the other hand (which grows on Barnes Common, Surrey), is intensely villose, with a long, narrow panicle and smallish leaves, and has the general aspect of *R. macrothyrsos*, grey, not yellowish-green as *R. Andersonii* is. The comparative lack of stalked glands on the stem is another feature of *R. Andersonii* which, with its glabrescence and bright red flowers, it shares with its close relative, *R. Lejeunii*.

R. macrothyrsos is, I believe, a much overlooked bramble, although abundant on the commons of N.W. Kent. I therefore append a description, drawn up from Kentish bushes, to aid in its recognition.

R. MACROTHYRSOS Lange (65). *R. vestitus*, f. *pulla* Braun. Stem obtuse-angled, striate, dull reddish-brown, felted and densely intricately villose, with a fair number of short acicles and stalked glands and a good many pricklets. Prickles unequal, slender, with a broad deltoid base, straight and patent, falcate or deflexed. Leaves small, flat, pedate, subglabrescent above, soft with thick, short, shining, grey hairs and felt beneath, with unequal incised, finely mucronate teeth, the principal teeth patent, the veins pectinate. Petiole short. Terminal leaflet broadly rhomboid-obovate, with a truncate base and a short point, somewhat lobed towards the point. Petiole, petiolules and midribs with many hooked prickles. Panicle elongate, narrowly pyramidal, truncate, with many simple ovate or lanceolate leaves and many long, much deflexed, slender, falcate and hooked prickles. Panicle branches patent or slightly ascending, 5-3 flowered, the lowest inclined to be fasciculate. Panicle rachis, branches and pedicels felted and villose and with a fair number of short sub equal, stalked glands and acicles. Flowers moderately small, cupped. Petals bright pink, narrowly oval or obovate. Calyx segments appendiculate, reflexed in fruit. Calyx grey felted and villose, aculeolate and glandular. Stamens slightly longer than the yellowish-green styles. Anthers glabrous. Young carpels abundantly pilose. Fruit copious, globose, rather small. Forms waist-high bushes in open places on all our pebbly commons in N.W. Kent, coming into flower towards the end of June. Rogers, following Focke, associates this with *R. vestitus*—they have not *R. adscitus* in Germany. I think it is more allied to *R. adscitus*. The bramble that most resembles it in general aspect is perhaps *R. festivus*, but that is much more glandular in panicle and has concolorous leaves. *R. clivicolus* (Ley) looks much like it too. On Chiselhurst Common *R. macrothyrsos* crosses with *R. ulmifolius*; the bushes are sterile.

Another hairy-stemmed bramble near *R. vestitus* that will be new to many bramble students is R. ANDEGAVENSIS Bouv. (45). *R. umbrosus* Bor. *R. gymnostachys* Genev., p.p. Stem angled, with flat sides, hairy, dark red, glaucous and waxed in autumn. Prickles dark red, hairy, with long slender points from a deltoid base, sub-equal, patent, a few declining. Leaves large, 3-5-nate, glabrescent above, shortly hairy and grey-felted beneath, shallowly, minutely, unevenly sinuate-denticulate, some teeth patent or repand. Terminal leaflet broad at base and apex, oblong-roundish, shortly, broadly cuspidate, base slightly indented. Panicle elongate, not leafy, dense, branches forming many-flowered cymes; rachis dark red, very villose, with a few scattered, sunken, stalked glands and many strong, falcate or declining prickles. Petals a lovely bright rose, sometimes nearly the size of a sixpence, suborbicular, suddenly contracted into a short, broad claw. Stamens white-pink, equalling or slightly exceeding the greenish or reddish styles. Calyx aciculate, felted and hairy, with some sunken, inconspicuous, stalked glands; segments reflexed after flowering. Young carpels hairy. Fruit usually abundant. Seen at Witley Sandhills, Surrey; Hayes Common, N.W. Kent, and near Bimbury, E. Kent.

On Hayes Common and Bostal Heath, N.W. Kent, and on Wimbledon Common, Surrey, there is a bramble which our authorities nearly always have named *R. ericetorum* Lef. The same bramble occurs on Farnborough Common, Kent—very close to Hayes Common—and there it has been named *R. infestus* Weihe. I contend that the bramble in all these localities—it has been collected and distributed many times through the B.E.C.—belongs to the species *R. Griffithianus* Rogers. The occurrence of this species in Kent, so far from Wales, need occasion no surprise, since Focke has recorded it from the Black Forest. Nevertheless we have the true *R. ericetorum* Lef. also in N.W. Kent. It is the bramble that Rogers has described under the name of *R. Radula*, sub-sp. *anglicanus*. This latter bramble has not been recorded from Germany, but it occurs in France, and the fact of its identity with *R. anglicanus* Rogers is known to Bouvet and Sudre. I follow with notes on the Kentish bramble, for comparison with the Welsh bramble. R. GRIFFITHIANUS Rogers (98). The roundish or broadly ovate, softly villose leaves are present only on the main stem and are accompanied by broad stipules. The stem branches freely and bears narrower, obovate-cuneate, white-felted, subcoriaceous leaves, plicate, undulate at the margin and red-edged. The flowering branch is exactly pentagonal in the middle. Flowers pink in bud, nearly white when expanded and 3 cm. across. Petals oval, 2 × 1, more tapered to the base than to the entire apex, a few minute serratures on the side, at first cupping, at length horizontally expanded with the sides reflexed (as in the Suberecti). Stamens white, very long, much exceeding the yellowish-salmon styles. Calyx segments olive-green, white-edged, and with dark red, mucronate, not leafy, tips. The whole bramble is very prickly. The smaller stem prickles and pricklets from a swollen base, the deep red stem and panicle rachis with crimson-based prickles, the white-felted leaves and large, long-stamened flowers with a tinted eye, form an attractive bush which recalls our English *R.* "*Godroni*" in several respects. The fruit ripens slowly.

Boulay combined *R. uncinatus* P. J. M. with *R. ericetorum* Lef., which is understandable if *R. ericetorum* is Rogers's *R. Radula*, sub-sp. *anglicanus*, but not if it is the bramble that I have just described. I have found R. UNCINATUS P. J. M. (87) on Tooting Common, Surrey. Although it is unlike the specimens from the Bucks locality I feel no doubt of the correctness of my determination. The leaves are plicate and very elegantly cut, the leaflets much tapered to the base; the stem green to yellowish, its branches livid at the base. The basal leaflets, contrary to Rogers's description, are conspicuously stalked, agreeing therein with Focke's description and Sudre's figure. The petals are rather narrowly obovate, pinkish, emarginate; the stamens white, rather exceeding the yellowish styles. The leaves and panicle are densely armed (the panicle rather weakly) with yellowish, hooked prickles. The sepals are leafy-pointed.

In the same locality I have found R. SCHEUTZII Lindeb. (28), an interesting northern species, discovered by C. E. Britton here many years ago. The hairy anthers, very long stamens, large flowers, and fruit, very prickly stem, and leaves green on both sides separate it readily from both *R. Lindebergii* and *R. pulcherrimus*. The stem and underside of the leaves are more hairy than one would expect from the description in Rogers's *Handbook*. The panicle branches are divided to the base. Flowers deep pink inside, much paler outside. Bracts, bracteoles and stipules exceptionally broad. Petiolules and midribs with hooked, strong-based prickles.

R. apricus Wimmer has been recorded as a Surrey bramble by Focke. It is recorded also from N. France, Belgium, W. and S. Germany to Silesia. On Chiselhurst Common, Kent, we have a bramble which I make out to be this. The description is as follows: R. APRICUS Wimmer (131). Stem obtuse-angled, thinly hairy, glabrescent, glaucous, light green, with dense, red, mixed armature as in the Glandulosi. Prickles unequal, the longer with very slender, declining or falcate red points from a swollen, prolonged, green or yellowish base, the smaller with a more swollen base. Leaves 3-4-5-nate, pedate, thick, large, concave, red-edged, light green; roughly hairy, glabrescent above; shortly villose beneath, veins pectinate, margin with unequal, moderately coarse, ovate mucronate teeth. Stipules narrowly lanceolate. Petiole channelled, sometimes obsoletely. Terminal leaflet broadly oval, base emarginate, gradually and longly acuminate, 3-4 times as long as its stalk. Flowering branch and panicle rachis green, with red arms, interruptedly channelled, with acicles nearly patent on the upper part of the rachis and on the pedicels, more deflexed below. Panicle nodding, top rounded or truncate, dense, racemose above, subracemose below, the lowest branch 2-4 flowered, with 2-6 simple leaves, all pedicels half erect, about one inch long. Rachis wavy, rigid, stout, villose. Flowers one inch across, stellate, white with a red eye. Petals pure white (even in bud), entire, narrow oval, narrowed to both ends. Calyx armed as rachis, greyish green, segments long-pointed, half erect when the flower opens, reflexed during flowering, again half erect after the petals have fallen. Stamens white, unequal, the longer slightly exceeding, the shorter slightly falling short of the yellowish-green styles, which are red-based from the first. After the petals have fallen the stamens turn red or rusty and stand erect in a close mass. Young carpels sometimes slightly pilose. Fruit perfected, ovate, moderately large. Begins to flower in the middle of June. The contrast of bright green foliage and red arms, and the large, starry, pure white, red-eyed flowers, make it a conspicuous sight. The German botanists associate it, as a sub-species, with *R. Koehleri* Weihe. I am not acquainted with *R. Koehleri*, but I should have thought it belonged more properly to the Glandulosi.

R. HIRSUTISSIMUS Sudre & Ley, (53). *R. fuscus*, var. *hirsutissima parce glandulosa* Focke in *B.E.C. Rep.* 1886, p. 149; *Flora Heref.*, p. 523. *R. Schlechtendalii* microg. *hirsutissimus* Sudre & Ley. Stem green to fuscous, obtuse-angled, sides convex or flat, striate, densely intricately villose and felted, glaucescent, cerosinose in autumn. Prickles pale, at length more or less crimson, rather unequal and short, slender from a broad base, exactly patent, some deflexed, some bent at the tip; a variable quantity of short-stalked glands and acicles. Leaves 3-5-nate, light green, moderately small, thick, irregularly, rather coarsely, unequally toothed, strigose above, green beneath and hairy, not felted, veins pectinate with long shining hairs. All leaflets short-pointed, contiguous, not imbricate. Terminal leaflet roundish, narrowed to the emarginate base. Flowering branch green, very villose and felted, with usually copious acicles and stalked glands, the prickles numerous, slender, rather weak, straight or falcate, from an extended base. Panicle with one to several simple leaves, lax, pyramidal below, cylindrical above, the branches divided about half way, patent or slightly ascending, the pedicels (including the terminal) rather long. Flowers small, cupped. Petals pinkish in bud, white, narrow oval, somewhat tapered to both ends. Calyx deep cream-coloured, segments cuspidate, loosely reflexed after flowering. Stamens white, no longer than the short yellowish-green styles. Anthers glabrous. Young carpels glabrous. Receptacle shortly villose. This is the bramble called by Rogers "*R. leucanthemus?*" I have seen it in several stations in Surrey and at Barnet Wood in N.W. Kent. Both at Burgh Heath and Oxshott Heath, Surrey, it grows in proximity to bushes of *R. fuscus*, var. *nutans*. The incurved, crumpled flowers resemble those of *R. fuscus* (English type), and the panicle is also subracemose towards the apex as in that bramble. I have never found the stem, much less the panicle, nearly eglandular. In the average condition the supply of stalked glands in the panicle is in excess of what is normal to *R. vestitus*. It might well be that it originates from *R. fuscus*, as first supposed by Ley and Focke.

Another very hairy bramble which I have found in Kent, and which will be sought for in vain in Rogers's *Handbook* (among the Vestiti) is R. LEUCOTRICHUS Sudre (64). The stem is deep red, sharp-angled with flat sides, striate, villose, with an occasional pricklet or short-stalked gland. Prickles mostly nearly equal, almost confined to the angles, lanceolate from a deltoid base, the larger deflexed and broad-based, the smaller patent, a few falcate. Petioles long, with hooked prickles. Stipules red, sparsely glandular, narrowly linear lanceolate. Leaves sub-glabrous above, except along the principal veins, greyish-felted and thickly villose beneath, especially on the veins, doubly, somewhat shallowly dentate, with long fine mucros. Leaflets sharply cuspidate. Terminal leaflet oval, or obovate, apex rather truncate, base emarginate. Intermediate leaflets nearly equalling the terminal leaflet. Flowering branch densely villose, with a very few stalked glands sunken in the close, long villi on the rachis and branches. All leaves conspicuously incised. Prickles slender, unequal, deflexed, falcate or hooked. The lower part of the panicle leafy and narrowly pyramidal, the upper part leafless and cylindrical, the top dense and truncate; all the branches erecto-patent. Petals moderately large, deep pink, roundish, some oval. Stamens deep pink, slightly longer than the green styles. Calyx segments reflexed in fruit, grey-felted and moderately hairy. Young carpels pilose. Receptacle villose. Fruit sub-globose, normally developed.

In a hedge, on clay, south of Highams Hill, N.W. Kent, not far from the Surrey boundary; occurs in other localities in N.W. Kent. Hitherto it has perhaps been confused with *R. lasioclados* Focke.

I believe R. ATROCAULIS P. J. M. (35c) has not hitherto been reported as British. It grows on Hayes Common, N.W. Kent, and I have also seen a specimen which came from Surrey. Focke and Sudre associate this with *R. villicaulis*, but Friderichsen places it in the Vulgares. Erichsen also keeps it distinct from *R. villicaulis*. The stem is deep purple-brown; prickles falcate, with hard points. Leaves small, light green, thick and firm, glabrous above, grey felted and softly villose beneath; teeth simple, sub-equal, irregular, shallow, with rather long mucros, some patent. Petiole broadly channelled throughout; stipules high, falcate, semi-lanceolate. Terminal leaflet sub-orbicular, shortly cuspidate, base sub-entire. Prickles on the flowering branch long, patent, falcate and hooked, very unequal. Panicle short and rather broad, truncate, dense, with some sunken, sessile and sub-sessile glands, but no stalked glands. Petals pink, oval, moderately large, shallowly notched at apex. Calyx segments with a conspicuous, narrow, white border, reflexed in fruit. Stamens pinkish, exceeding the yellowish, pink-based styles; anthers glabrous. Young carpels thinly pilose. Fruit oblong.

Sudre has pointed out that the specimen illustrating *R. hirtifolius* M. & W. in the Set of Brit. Rubi is not M. & W.'s bramble and he has named the bramble represented, R. MELANOCLADUS Sudre (60d). English bramble students had adopted the views of Focke who had widened his conception of *R. hirtifolius* until, for him, it embraced all intermediates between *R. villicaulis*, *R. gratus*, *R. pyramidalis*, *R. silvaticus*, *R. macrophyllus* and *R. vestitus*. It seems to be generally agreed, however, that M. & W.'s bramble is not very different from *R. pyramidalis* Kalt., and it is perhaps best to restrict their name to similar forms that can be closely associated with *R. pyramidalis* and to give independent names to groups of forms intermediate between the other species mentioned. Krause, commenting on Wirtgen's specimen, states that *R. hirtifolius* recedes from *R. pyramidalis* in the direction of *R. vestitus*; but Sudre gives the points of distinction from *R. silvaticus*. A bramble agreeing well with the specimens in the Set of Brit. Rubi and with Sudre's description of *R. melanocladus* occurs in Westwood Lane, Welling, and in Lessness Wood, N.W. Kent, and in both cases *R. pyramidalis* and *R. macrophyllus* are present in the vicinity. The stem is deep red, angled, striate, the sides slightly convex or slightly channelled, felted and villose, and bears reddish sessile glands, a few tiny stout pricklets and an occasional acicle and short-stalked gland. Prickles moderate, with a rather broad crimson base and a fine straw-coloured point, deflexed, not equal, the smaller straying off the angles. Leaves 5-nate, light green, glabrescent above, minutely felted, pubescent and pilose beneath, moderate or small. Petiole flat above, like the central petiolule bearing many strong, falcate pricklets in heaps. Terminal leaflet rather roundly ovate, gradually acuminate, base emarginate, 2-4 times as long as its stalk, slightly lobate, with rather small to rather large fine-pointed teeth. Flowering branch blunt-angled, more and more felted and villose upwards. Leaves 1-3-4-nate, large, greenish-felted beneath. Panicle elongate, flat-topped, broader below; all branches deeply divided or fasciculate, the lower half-erect, longer than the leaves, those above the leaves nearly patent, about 4-flowered; pricklets, acicles and stalked glands rather numerous. Pedicels about two-thirds of an inch long, with many fine pale acicles; terminal flower sub-sessile. Flowers of moderate size; petals narrow oblong-obovate, entire, pinkish-lilac. Calyx segments grey-felted and hairy, slightly aciculate and glandular externally, white within, reflexed in fruit. Stamens pinkish, turning red, much exceeding the greenish (or pinkish) styles; anthers glabrous. Young carpels pilose. Fruit subglobose, normally produced. The leaves are rather velvety as in *R. pyramidalis*, but the veins are not pectinate; prickles, colour of stem and leaves also as in *R. pyramidalis*, but prickles much less robust. Terminal leaflet as in *R. macrophyllus* but proportionally broader. Panicle leaves very like *R. macrophyllus*. Panicle if not vigorous ending in a raceme as in *R. pyramidalis*. The white reflexed calyx segments are a prominent feature.

The common Kent and Surrey bramble known sometimes as *R. argenteus*, f. *glandulosa*, and sometimes as *R. Gelertii* is, I believe, neither *R. argenteus* nor *R. Gelertii*, but R. ALTERNIFLORUS M. & L. (83). True *R. Gelertii* should have a tall stem, angled and furrowed above, not glaucous; leaves greenish-grey felted beneath, the terminal leaflet elliptical, with nearly straight sides, large and long (especially on the flowering branch!), the basal leaflets longer than the petiole; the panicle considerably glandular, narrow and elongate, the upper branches regularly 7-flowered, cymose, and half erect; petals pure white, broad, elliptical; the young carpels glabrous. Focke puts it with the Candicantes, and says that in leaves and habit it resembles *R. thyrsoideus* and also recalls *R. Radula*. Friderichsen puts in with the Egregii and says it is related to *R. egregius* and *R. pulcherrimus*. Our bramble, therefore, cannot well be *R. Gelertii*. It has a low, arcuate, prostrate, sub-cylindrical, glaucous stem; leaves white-felted beneath, the terminal leaflet mostly obovate, broad, the basal leaflets falling short of the petiole; the panicle less glandular (variable as to this), strongly sub-corymbosely pyramidal, upper branches 3- or 5-flowered, nearly patent; petals pink, notched, obovate, with a yellowish claw; the young carpels very pilose even after they have turned red.

The *B.E.C. Rep.* for 1898 records that a bramble from Dunster, Somerset, has been examined by Mr Gelert who has identified it as R. DREJERI G. Jensen, type (89). In R. P. Murray's *Fl. of Somerset* (1896) on p. 111 the author records *R. Drejeri* from four localities in the county, one of which is Dunster, but on p. 416 says that the English plant proves to be different from the German and has received the name *R. Leyanus* Rogers. In Marshall's Supplement to this Flora (1914) is the note that Mr Rogers writes that the Dunster plant is "type: very strong." New localities are given for *R. Drejeri* and for sub-sp. *Leyanus* Rogers. Focke (1914) says that he doubts the identity of the English and Danish *R.*

Drejeri. He gives the leaves as grey-felted, however, and says nothing as to the anthers. He ignores *R. cinerosus* Rogers. Sudre (*circa* 1910) adopts *R. Drejeri*, *R. Leyanus* and *R. cinerosus* as distinct, and not closely related (!).

I have seen the Dunster specimens. They have glabrous anthers and leaves strongly grey-felted beneath. Except for the anthers they exactly match Friderichsen's Danish specimens, which I have also seen. Friderichsen, however, says that in the Vosges the representative of *R. Drejeri* has glabrous anthers. I have seen a bramble in Surrey, between Merrow and Newlands Corner, which is identical with the Dunster specimens:—Leaves 5-nate, with dense grey felt and velvety pubescence, basal leaflets with stalks 2-2.5 mm. long. Stem red-brown or yellowish, blunt-angled and sulcate, densely villose. Panicle rachis densely villose, with 5 or 6 simple leaves, the lowest large, broadly cordate; the terminal leaflet of the 3-nate leaves below the panicle broadly obovate, very shortly broadly cuspidate. Panicle cylindrical with one or two much longer, half-erect, lower branches, dense at apex, branches divided to the base, fasciculate; prickles nearly straight, much declining. Rogers's Silchester specimens of *R. cinerosus* are the same thing.

In N.W. Kent *R. Drejeri* has been recorded from Plumstead Common, a locality in the midst of a dozen or so stations for a bramble that has been named by Rogers as *R. cinerosus*. This bramble I have cultivated from rooted shoot-tips and from seed, and I find that it develops into the Merrow bramble. I have observed also in one and the same locality, on clay, several states of the bramble such as have presented themselves in my garden. I am convinced that *R. Drejeri*, *R. Leyanus*, and *R. cinerosus* are one and the same thing, not even sub-specifically distinct. If my conclusion is right it might be expected that two, or even the three of these names, have sometimes been given to the bramble from the same locality. The best instance of this is as follows:—*R. Leyanus*: wood at St Woolstan's farm, Welsh Newton (Trans. Woolhope Club, 1896, p. 74). *R. pulcherrimus*, f. *setosa* [= *R. cinerosus*]: St Woolstan's Wood, Welsh Newton, 1885 (*l.c.*, p. 62). *R. Drejeri*: wood at St Woolstan's Farm, Welsh Newton (Trans. Woolhope Club, 1905, p. 85). Further, it might be expected that doubt would sometimes be expressed as to whether a given bramble was *R. Leyanus* or *R. Drejeri*. Not only is this illustrated in the Somerset Flora, and in the Trans. Woolhope Club, 1896, at p. 74, but also in the Journal of Botany and in the B.E.C. Reports frequently when one or other of these bramble-names is mentioned. It is all a matter of how old or how strong the bramble is, which name is given to it. I would add that Friderichsen is convinced that *R. Drejeri* belongs to *R. horridicaulis* P. J. M., an opinion in which Erichsen concurs. Aberdare specimens labelled *R. horridicaulis* seem to me simply *R. Drejeri*: and there is nothing in the Journal of Botany 1906 description to exclude *R. Drejeri*. It should be carefully compared with Jensen's and Friderichsen's descriptions of *R. Drejeri*.

Two out-stations for *R. imbricatus*, var. *londinensis* Rogers (14c) in Kent are St Paul's Cray Common and Bostal Heath. At the latter place I have also noted pink-flowered *R. dumnoniensis* Bab. (29), new, I believe, to Kent. *R. holerythros* Focke (12) also has not been reported hitherto, I think, from Kent, but we have it at Hayes and Chiselhurst. *R. nessensis* Hall (2) is plentiful in five stations around Hayes and Chiselhurst. *R. nitidus* Wh. & N. (7), collected by me in 1922, is now extinct, I fear, on Keston Common. *R. sulcatus* Vest. (5), *R. Lejeunii* Wh. & N. (102), and *R. ochrodermis* A. Ley (147), are new discoveries of mine in the Forest of Blean, and *R. hesperius* (Rogers) (49) in Seal Chart, where it accompanies *R. longithyrsiger* Bab. (118), *R. angustifrons*, var. *pallidisetus* Sudre (137) and *R. conspectus* Genev. (=the *R. scaber* of Rogers's Handbook). *R. gratus* Focke (39) is proving frequent in N.W. Kent, *R. calvatus* Blox. (35d) so far only at Shirley and Selsdon, Surrey. *R. ramosus* Briggs (41) is general on the N.W. Kent and E. Surrey commons, but the *R. thyrsoideus* Wimmer (42) group I have encountered only at Claygate, Surrey, and at Farnborough Common, Kent, in the form of *R. candicans* Weihe. *R. Lindebergii* P. J. M. (31) I have seen at Witley Sandhills, Surrey, and, I believe, *R. Genevierii* Bor.

I have found no name for a bramble that I have seen growing at Worms Heath, Surrey; Keston Common, Hays Common, West Wickham Common, and Holwood, W. Kent. It is abundant, quite uniform and fertile, and seems to come nearest to *R. Bloxamii* Lees. Rogers says that *R. Bloxamii* is remarkably constant; Focke that it is remarkably inconstant. I have, therefore, studied *R. Bloxamii* very closely in several stations in Holmesdale, between Wrotham and Malling, and I cannot find that in any of its stations there it makes any approach to my bramble on the plateau. I have seen dried specimens that are certainly this named as follows:—

From Keston Common—"*R. rudis*, untypical."
From Hayes Common—"*R. scaber.*"
From Worms Heath—"*R. Koehleri*, sub-sp. *dasyphyllus.*"
From Featherbed Lane, Addington—"*R. radula*, sub-sp. *echinatoides.*"

I should not be surprised if my bramble proved eventually to belong to the large group-species, *R. Menkei* Wh. & N. Certainly it has much likeness to *R. propexus* Frid., which belongs to that group. The chief objection is, however, that its affinities are with our English *R.* "*Godroni,*" rather than *R. vestitus.* The description is as follows:—

R. LARGIFICUS mihi (109). Stem obtuse-angled, sulcate above, green to reddish, glaucescent, felted and villose. Prickles long-based, abruptly narrowed, falcate or straight, sharply deflexed; many minute pricklets and short-stalked glands; a very few intermediate gland-tipped pricklets. Leaves 5-nate, glabrous above, thinly greenish-grey felted beneath and hairy on the nerves, thick, plicate and rugose. All leaflets sub-cordate. Terminal leaflet obovate-oblong, with straight sides when large, a short point, irregularly or doubly, rather coarsely mucronate-dentate, the principal teeth patent or repand. Flowering branch angled and sulcate, becoming red, with strong and long-based crimson falcate prickles below; with yellowish leaves having soft glittering grey pubescence beneath, an undulate margin and impressed veins. Panicle rachis stout and rigid, villose, a few stalked glands longer than the villi and than the diameter of the pedicels and many sunken, and rather weak, aciculate prickles. Panicle lax, narrowly pyramidal, blunt, leafy but not in the upper fourth. Terminal flower sub-sessile; sub-terminal branches 1-2-flowered (bracteoles = pedicels), middle branches patent 3-flowered, lower branches remote, about 4-flowered and accompanied by a solitary stalked flower at the base. Flowers not exceeding 2 cm., often less. Petals obovate, incurved, white, with a broad yellowish claw. Stamens erect, white, equalling or shorter than the yellowish styles, which turn rosy at the base. Calyx light yellowish-green, felted, segments with a narrow, white margin, gradually acuminate, reddening at the base within, reflexed during flowering, becoming exactly patent after the petals have fallen, finally erect or partly loosely reflexed. Young carpels hairy. Fruit abundant, very large, ovoid.

R. Kaltenbachii Metsch. Sudre asserts that the English plants put to this belong to the group of *R. Menkei*. Focke and Keller give no station for *R. Kaltenbachii* nearer to Britain than the Belgian Ardennes. Certainly there is much general resemblance, but the Central European plant has white flowers, glabrous carpels, fruiting calyx-segments patent to more or less erect, and leaves narrow ovate-oblong, the upper half of the leaflets tapering into a long point (a *very* long point on flowering branches), the base cordate; whilst our plant, R. DIVERSUS mihi (109(2)), has pinkish or bright pink flowers, hairy carpels, fruiting calyx segments loosely reflexed, leaves rhomboid, the principal teeth large, triangular, patent or repand, nerves pectinate, and upper panicle leaves greyish-felted—looking altogether intermediate between *R. pyramidalis* and *R. foliosus*, with which it grows at Lessness and at Hayes, N.W. Kent. So it may well approach, if it does not belong to, the group of *R. Menkei*. Sudre, indeed, in his copy of Rogers's *Handbook*—now in my possession—notes that Set No. 48=*R. distractus* P. J. M. Boulay's description of that species, which he places as sub-sp. No. 1 to *R. Menkei*, marks quite a different plant from ours, however. Further localities in which this bramble occurs in our district are Northumberland Heath and Shooters Hill, N.W. Kent, and Selsdon and Frith Wood, Farleigh, Surrey. In the last-named locality it was gathered by C. E. Britton long ago, and was named by Rogers as *R. Bellardii* "type," and is so recorded in the Journal of Botany for March 1903. It is, however, not *R. Bellardii* but "*R. Kaltenbachii.*" I know no station for *R. Bellardii* in either Kent or Surrey.

At Fairchilds, Chelsham, Surrey, I have found *R. dumetorum*, var. *raduliformis* A. Ley, which may be new to Surrey. In Warren Wood, Shooters Hill, and again between Eltham Park and Avery Hill, N.W. Kent, we have *R. serpens* Weihe with sub-cordate-ovate leaves, shallowly denticulate, with finely pointed teeth, as originally described in *Comp. Fl. Belg.*

THE DISTRIBUTION OF THYMUS IN BRITAIN.

By Karl Ronniger, Vienna.

(See *Botanical Exchange Club Reports* 226-239, 1923; 167-8, 1926; and 679, 1927.)

On pages 226-239 of the *Report of the Botanical Exchange Club* for 1923, I gave a review of the British species and forms of the genus as represented in Dr G. C. Druce's herbarium. Since then the forms enumerated have been added to by *T. zetlandicus* Ronniger and Druce with f. *nanus* (*Report* 679, 1927), *T. carniolicus* Borbas and *T. pseudolanuginosus* Ronn. (*Report* 167-8, 1926). I have since been able to examine the material in the British Museum, as well as numerous further specimens sent by Dr G. C. Druce, and have consequently met with many additional locality records which are here treated of.

I. Species collectiva, Thymus Pulegioides L.

T. Pulegioides L.

4. North Devon. Westward Ho, Druce.
8. South Wilts. Mere Down, R. P. Murray.
9. Dorset. Compton Abbot, Linton, *H.B.M.*
15. East Kent. Dover, Druce.
17. Surrey. Epsom, Groves, *H.B.M.*; Esher, f. *confusus* Brign. with narrow leaves and capitate inflorescence, Ley, *H.B.M.*; Betchworth, with prolification as in Linneaus' plant, Ley; Hursting, on chalk, Monckton.
20. Herts. Chorley Wood, Wernham, *H.B.M.*
21. Middlesex. Harefield, Druce.
22. Berks. South Hinksey, Druce.
23. Oxon. Beckley, Peppard, Druce.
24. Bucks. Hyde Heath, Druce.
31. Stafford. Mocktree, Druce.
32. Northants. Harleston, 1873, Druce.
33. East Gloster. Andoversford, Druce.
35. Monmouth. Llangattock, Vibon-avel, Ley, *H.B.M.*
40. Salop. Shrewsbury, Moyle Rogers, *H.B.M.*

T. Pulegioides × Serpyllum = T. oblongifolius Opiz.

Examination of the original specimen has led me to the conclusion that the oldest binomial for this hybrid is not *T. Celakovskyanus* M. Schultze, but *T. oblongifolius* Opiz Naturalientausch. p. 24, 1825. Compare also remarks in Fedde *Repertorium* xxiv., 24, 1927.

11. South Hants. Farley Mount, Groves, *H.B.M.*
17. Surrey. Kew, Druce.

28. West Norfolk. Swaffham, Druce.
32. Northants. Kingsthorpe, Miss Shepard, *H.B.M.*
49. Carnarvon. Portmadoc, Bailey, *H.B.M.*
62. North East Yorks. Hambleton Hills, cult., J. G. Baker, *H.B.M.*
88. Mid Perth. Killiechonan, Loch Rannoch, Druce.

Ireland. Galway. Rossmore, Linton, *H.B.M.*

T. Pulegioides × pycnotrichus = T. Henryi Ronn.

6. North Somerset. Clevedon, Painter, *H.B.M.*
10. Wight. Ventnor, Bailey, *H.B.M.*
14. East Sussex. Telscombe, Druce.
17. Surrey. Reigate, Syme, *H.B.M.*
34. West Gloster. St Vincent Rocks, Druce, *H.B.M.*
36. Hereford. Valley of Dwr, Ridley, *H.B.M.*
41. Glamorgan. Glyn Neath, Linton, *H.B.M.*
74. Wigtown. Barnbarroch, Miss Higgins; Newton Stewart, Druce; *H.B.M.*; Portwilliam, Druce.
80. Roxburgh. Barnes, Brotherston, *H.B.M.*

T. glaber Mill., f. Chamaedrys (Fries).

See *Rep. B.E.C.* 168, 1926. Leaves more ovate, ± twice as long as broad.

6. North Somerset. Twickenham Hill, Miss I. M. Roper, *H.B.M.* & *Hb. Dr.*
7. South Wilts. Odstock, Druce.
9. Dorset. Cranbourne Chase, *Hb. Druce*; Edmondsham, E. F. Linton, *H.B.M.*; Wool (floribus albis), R. P. Murray, *H.B.M.*
10. Wight. Apes Down, 1887, C. E. Palmer.
12. North Hants. Hook Common, C. E. Palmer.
14. East Sussex. Chailey Common, T. H. Hilton; Cuckfield, Druce.
15. East Kent. Highnam, Druce; Canterbury, C. E. Palmer, *Hb. Dr.*
17. Surrey. Limpsfield, H. E. Fox; Woking, Groves, *H.B.M.*; Englefield Green, Pyrford, Druce.
18. South Essex. Galley Wood, G. C. Brown.
19. North Essex. Walden Chalkpit, Druce.
20. Herts. Langley, Welwyn, Blake; Hitchin, Ware, Druce.
21. Middlesex. Hounslow, Dyer; Harefield, Trimen, *H.B.M.*; Stanmore Heath, *Hb. Druce.*
22. Berks. Streatley, Burghfield, V. Murray; Tubney, Brimpton, Wytham, Besilsleigh, Druce.
23. Oxon. Peppard, chalk rubble at Oxford, Henley, Pool Bottom, Druce.
24. Bucks. Seer Green, Chenies, Fawley, Whaddon, Hyde Heath, Druce.
25. East Suffolk. Bungay, Atkins, *H.B.M.*; Somersham, D. Brown.
28. West Norfolk. Swaffham, Linton, *H.B.M.*
29. Cambridge. Unlocalised, Newbold, *H.B.M.*
30. Beds. Barton, T. Blow and D. Higgins; Flitwick, Saunders, *H.B.M.*

32. Northants. Plain Woods, Druce, *H.B.M.*; Cosgrove, Druce.
36. Hereford. Great Doward, Druce.
38. Warwick. Yarninghall Common, Bromwich, *H.B.M.*
55. Leicester. Billesdon, Coplow, Horwood, *Hb. Druce.*
65. North West Yorks. Thirsk, Foggitt, *H.B.M.*
74. Wigtown. Barnbarroch, D. M. Higgins, *H.B.M.*
7: 7~~9~~. Peebles, Druce, *H.B.M.*
112. Zetland. Lerwick, Druce.

Forma glaber (Mill.). Leaves more lanceolate, ± three times as long as broad.
3. South Devon. Christow Down, Moyle Rogers, *H.B.M.*
5. South Somerset. East Pennard, R. P. Murray, *H.B.M.*, sub-f. *gracilicaulis*; Blackdown Hills, Leigh Common, R. P. Murray, *H.B.M.*
6. North Somerset. Near Failand, H. E. Thompson, *H.B.M.*
9. Dorset. Cranborne Chase, Melvill; Spretisbury, R. P. Murray, *H.B.M.*
10. Isle of Wight. Apesdown, Druce, sub-f. *gracilicaulis.*
13 or 14. West or East Sussex. Pitt Down, Standon, *H.B.M.*
15. East Kent. Dover, R. P. Murray, *H.B.M.*; Folkestone, V. Murray.
17. Surrey. Warlingham, Groves; Walton on the Hill, Groves; between Kew and Richmond, Middleton; Fairlop, Limpsfield, H. E. Fox, *Hb. Druce* and *H.B.M.*; Buckhurst Hill, Groves, *H.B.M.*
18. South Essex. Epping Forest, E. Forster; Woodford, Young.
20. Herts. Welwyn, Blow, *H.B.M.*, sub-f. *gracilicaulis*; do., Blake, *Hb. Druce.*
21. Middlesex. Harefield, Trimen, *H.B.M.*; Stanmore, *Hb. Druce*, sub-f. *gracilicaulis.*
22. Berks. Streatley Hills, V. Murray, *Hb. Druce*, sub-f. *gracilicaulis.*
23. Oxon. Bretch, French; Goring, Druce, sub-f. *gracilicaulis*; Lewknor, French, *H.B.M.*; Hardwick, Caversham, Warrenhill, V. Murray, *Hb. Druce.*
28. West Norfolk. Thorpe, Linton, *H.B.M.*
31. Hunts. Abbots Ripton, Linton, *H.B.M.*, sub-f. *gracilicaulis.*
33. East Gloster. Leckhampton Hill, V. Murray
35. Monmouth. Chepstow, Monington, *H.B.M.*
36. Hereford. Ensop Hill, Ley, *H.B.M.*, sub-f. *gracilicaulis.*
Ireland. Wicklow, Young, *H.B.M.*

II. Species collectiva, Thymus Froelichianus Opiz.

T. carniolicus Borbas.

See *Rep. B.E.C.* 167, 1926.
14. East Sussex. Telscombe, Hinton, *H.B.M.*
29. Cambridge. Gogmagog, Hunnybun, *H.B.M.*
74. Wigtown. Barnbarroch, Miss Higgins, *H.B.M.*

III. Species collectiva, Thymus Serpyllum (L.) Fr.

T. Serpyllum L., sens. strict.

Forma Linnaeanus Gren. & Godr. Leaves elliptic, about 2 mm. broad.
Guernsey. Barton (N.125), *H.B.M.* Jersey. St Ouen, Plemont, Druce.
23. Oxon. Goring, Druce, *H.B.M.*; Henley, Druce.
41. Glamorgan. Barry Isle, Wade, *Hb. Druce.*
37. Worcester. Malvern, Wilmott, *H.B.M.*
57. Derby. Wilmott (712), *H.B.M.*
66. Durham. Widdy Bank, Druce.
72. Dumfries. Moffat, Carruthers, *H.B.M.*
90. Angus. Barry Sands, Round Loch, Druce.
91. Kincardine. Banchory, Druce.
92. South Aberdeen. Ballater, Druce.
105. West Ross. Gairloch, Big Sands, Druce.

Forma Ericoides Wimm. & Grab. Leaves small, linear-elliptical, about 2 mm. broad.
Jersey. Quenvais, Druce.
26. West Suffolk. Thetford, Newbold, *H.B.M.*
29. Cambridge. Deirly Ditch, Newbold, *H.B.M.*
54. North Lincoln. Alford, Burtt Davy, *H.B.M.*
57. Derby. Baslow, Bailey, *H.B.M.*
66. Durham. Newbiggin Moor, J. G. Baker, *H.B.M.*; Siney Bank, H. E. Fox, *Hb. Druce*; Widdy Bank, Druce.
90. Angus. Little Culrannoch, Sands of Barry, Druce.
91. Kincardine. Banchory, Druce.
105. West Ross. Gairloch, Druce.

Forma Empetroides Wimm. & Grab. Leaves small, linear, 1-1½ mm. broad.
3. South Devon. Buckland Monachorum, T. R. Briggs, *H.B.M.*
26. West Suffolk, Wilmott, *H.B.M.*

Forma silvicola Wimm. & Grab. Leaves obovate or elliptical, remote, 3-4 mm. broad.
Guernsey. Albecq, Barton (N. 126), *H.B.M.*
Jersey. St Brelade, Piquet; St Ouen, St Aubin, Druce.
2. East Cornwall. Polruan, C. E. Palmer.
23. Oxon. Wychwood, Druce.
24. Bucks. Westbury, Druce.
32. Northants. Colley Weston, Druce.
38. Warwick. Balsall Common, Druce.
Ireland. Galway. Roundstone, Druce.

Var. rigidus Wimm. & Grab.
See *Rep. B.E.C.* 232, 1923.
91. Kincardine. St Cyrus Cliffs, Druce.

T. PYCNOTRICHUS (Uechtritz) Ronn.

Guernsey. Vazon Bay, BARTON, *Hb. Druce.* Jersey. St Aubin, La Moye, St Ouen, Quenvais, Don Bridge, DRUCE.

2. East Cornwall. Polruan.
3. South Devon. Erme Estuary, BRIGGS, *H.B.M.*
5. South Somerset. North Hill, Minehead, *H.B.M.*
6. North Somerset. Uphill, DRUCE.
9. Dorset. Abbotsbury, Chesil Beach, DRUCE.
10. Isle of Wight. Freshwater, DRUCE.
13. West Sussex. Arundel, DRUCE.
17. Surrey. Englefield Green, DRUCE.
19. North Essex. Saffron Walden, BULLOCH.
20. Herts. Langley, LITTLE, *Hb. Druce.*
21. Middlesex. Harefield, DRUCE.
22. Berks. Tubney, Wytham, DRUCE; Streatley, V. MURRAY.
23. Oxon. Peppard, DRUCE.
24. Bucks. Chenies, Chalfont, Whaddon, DRUCE.
32. Northants. Harleston, DRUCE.
41. Glamorgan. Barry Isle, WADE.
42. Pembroke. Penally, TRIMEN, *H.B.M.*; Fishguard, DRUCE.
59. South West Lancs. Southport, DRUCE.
79 ~~78~~. Selkirk. Elibank, DRUCE.
79. [Peebles] Thornilee, DRUCE.
81. Berwick. Duns, DRUCE.
83. Edinburgh. Arthur's Seat, MACGRAB, *H.B.M.*
85. Fife. St Andrews, BAILEY; Balmuto, DRUCE.
88. Mid Perth. Struan, DRUCE.
89. East Perth. Bruar, DRUCE.
95. Moray. Culbin, DRUCE.
96. Easterness. Kincraig. SOMERVILLE, *H.B.M.*; Aviemore, DRUCE.
97. Westerness. Glen Spean, DRUCE.
104. Sky. LINTON, *H.B.M.*
105. West Ross. Gairloch, Kinlochewe, Cnochan, Gruinard, Melvaig, Aultbea, Big Sands, DRUCE; Loch Duich, DRUCE, *H.B.M.*
106. East Ross. Rosehaugh, DRUCE, *H.B.M.*
108. West Sutherland. WILMOTT, *H.B.M.*; Cnochan, Elphin, Betty Hill, DRUCE; Melvich, MARSHALL, *H.B.M.*
112. Zetland. Lerwick, DRUCE.

Ireland. Kerry. Waterville, DRUCE. Clare. Ballycallanonin Lough, TRAPNELL, *Hb. Druce.* Antrim. Cave Hill, DRUCE. Kerry. Summit of Mangerton, RIDLEY.

T. LANUGINOSUS Mill.

1. W. Cornwall. St Germains Beacon, BRIGGS, *H.B.M.*; Hayle, GROVES, *H.B.M.*
22. Berks. Streatley Hill, DRUCE.

33. East Gloster. Sapperton, Druce; Alveston, Trapnell, *Hb. Druce*; Cheltenham, Leckhampton Hill, V. Murray, *Hb. Druce*.
49. Carnarvon. Snowdon, Druce.
92. South Aberdeen. Braemar (N.128), Croall, *H.B.M.*

T. pseudo lanuginosus Ronn.

See *Rep. B.E.C.* 168, 1926.

9. Dorset. Cliffs near Dancing Ledge, Salmon, *H.B.M.*; Portland, near Easton, Murray; Durleston, Linton.
33. East Gloster. Leckhampton Hill, V. Murray.

T. Drucei Ronn.

23. Oxon. Aston Downs, Druce.
33. East Gloster. Sapperton, Druce.
49. Carnarvon. Snowdon, Druce.
74. Wigtown. Port William, Druce.
88. Mid Perth. Ben Lawers, Bishop Mitchinson, *Hb. Druce*; Ben Laoigh, Druce.
89. East Perth. Blairgowrie, Killiechonan, Rannoch, Druce.
90. Angus. Winter Corrie, Sands of Barry, Druce.
91. Kincardine. Banchory, Druce.
92. South Aberdeen. Ballater, Druce.
96. Easterness. Boat of Garten, Druce, *H.B.M.*
98. Argyll. Ben Laoigh, Druce.
105. West Ross. Cnochan, Gairloch, Druce.
108. West Sutherland. Cnochan, · Druce. Ireland. Londonderry. Binevenagh, Trapnell.

T. zetlandicus Ronn. & Druce.

1. West Cornwall. Helston, R. P. Murray.
41. Glamorgan. Cold Knap, A. E. Wade, *H.B.M.*
83. Edinburgh. Arthur's Seat, Young, *H.B.M.*
88. Mid Perth. Ben Laoigh, Groves; Fortingal, Linton, *H.B.M.*
95. Moray. Culbin Sands, Druce.
98. Argyll. Ben Laoigh, Druce, *H.B.M.*
105. West Ross. Big Sands, Druce.
108. West Sutherland. Wilmott (977), *H.B.M.*; Betty Hill, Druce.
111. Orkney. Hoy, Johnston, *H.B.M.*; Marshall (2744), *H.B.M.*
112. Zetland. Lerwick, Tate; Bressey, Smith, *H.B.M.*
    Ireland. Kerry. Brandon Mt., 2500 ft., Trapnell, *Hb. Druce*.
    Wicklow. Arklow Sands, Fawcett, *H.B.M.*

T. neglectus Ronn.

1. West Cornwall. Whitsand Bay, Briggs, *H.B.M.*
2. East Cornwall. Shepherds, Druce.
3. South Devon. Roborough Down, Briggs, *H.B.M.*; Halford, Townsend, *Hb. Druce*.
6. North Somerset. Mendip, R. P. Murray, *H.B.M.*; Uphill, Druce.

7. South Wilts. Odstock, DRUCE.
9. Dorset. Chesil Beach, DRUCE.
11. South Hants. Winchester, DRUCE.
12. North Hants. Between Odiham and Upton Grey. C. E. PALMER.
14. East Sussex. Seaford, STANDEN, *H.B.M.*; Bovendean, HILTON, *H.B.M.*; Hassocks, Newtimber, DRUCE.
15. East Kent. Kingsdown, H. E. Fox.
17. Surrey. Boxhill, YOUNG, *H.B.M.*
22. Berks. Compton Downs, DRUCE: Streatley. MURRAY.
23. Oxon. Bretch, Gibraltar Rocks, DRUCE.
24. Bucks. Princes Risborough, DRUCE.
38. Warwick. Lighthorne, C. E. PALMER.
41. Glamorgan. Caerphilly, WADE, *H.B.M.* and *Hb. Druce*; Barry, DRUCE.
43. Brecon. Pennywill, BARTON, *H.B.M.*
45. Monmouth. Wells of Birchwood, V. MURRAY.
48. Merioneth. Harlech, Dolgelly (687), BARTON, *H.B.M.*
49. Carnarvon. Criccieth, BAILEY, *H.B.M.*
57. Derby. Cromford, BAILEY, *H.B.M.*; Ellaton, LINTON, *H.B.M.*
66. Durham. Teesdale, DRUCE.
69. Westmorland. Duddon, HODGSON, *H.B.M.*
72. Dumfries. Corrie, DRUCE.
73. Kirkcudbright. Tongland Hill, COLES, *H.B.M.*
74. Wigtown. Castle Kennedy, 1883, DRUCE.
76. Renfrew. Gourock, MATHESON, 1846, *Hb. Druce.*
83. Edinburgh. Roslin, GREVILLE, *H.B.M.*
88. Mid Perth. Tummel, DRUCE.
90. Angus. Sands of Barry, DRUCE.
91. Kincardine. Feugh, Strachan, Banchory, DRUCE.
94. Banff. MARSHALL (2894). *H.B.M.*; Tomintoul, DRUCE.
96. Easterness. Boat of Garten. DRUCE.
104. Skye. Sligachan (2894), DRUCE.
105. West Ross. Gairloch. Mellon Charles, Port Henderson. Big Sands, Bealach nam Bo, DRUCE.
106. East Ross. Tain, DRUCE.
107. East Sutherland. Golspie, DRUCE.
108. West Sutherland. Betty Hill, DRUCE.

Ireland. Cork. CARROLL, *H.B.M.* Kerry. Derryvane, 1906, DRUCE. Waterford. Tramore, NICHOLSON, *H.B.M.* Wicklow. Arklow, FAWCETT. *H.B.M.* Down. Killard Point, WADDELL, *H.B.M.*

T. BRITANNICUS Ronn.

Guernsey. Vazon Bay, DRUCE.

1. West Cornwall. Porthgwarra. St Just, GROVES, *H.B.M.*; Boscawen, SLATTER. *H.B.M.*; St Ives. Sennen. TRAPNELL, *Hb. Druce*; Polzeath, H. E. Fox, *Hb. Druce*, fl. alb.
2. East Cornwall. St Dominick, BRIGGS, *H.B.M.*

3. South Devon. Bickleigh Downs, Briggs, *H.B.M.*; Torbryan, Lightfoot.
4. North Devon. Saunton Down, Hiern; Ilfracombe, Hort; Thurleston, Marshall, *H.B.M.*
5. South Somerset. Banwell, Stoddart, *H.B.M.*
6. North Somerset. Uphill, Druce.
8. South Wilts. Odstock, Druce.
9. Dorset. Swanage, Weymouth, Corfe, Druce; Wool, Kingsdown, Linton*; near Easton, V. Murray; Badbury Rings, Seacombe, Linton, *H.B.M.*
10. Isle of Wight. Ventnor, Bailey; St Helens, Freshwater Gate, Baker (and) Fawcett, *H.B.M.*
11. South Hants. Winton, Crabtree, Druce; Milton, Exbury, Groves, *H.B.M.*
12. North Hants. Between Odiham and Upton Grey, Druce.
14. East Sussex. East Rottingdean, Telscombe, Hilton; Brighton Cliffs, Hort, *H.B.M.*; Newtimber, Druce.
15. East Kent. St Margaret's, Druce.
17. Surrey. Boxhill, Young; Warlingham, Groves, *H.B.M.*
18. South Essex. Woodford, Young, *H.B.M.*
22. Berks. Hinksey, Druce; Aldworth, V. Murray.
23. Bullingdon, Oxon, on chalk rubble; Pool Bottom, Druce; between Charlbury and Wychwood, H. E. Fox, *Hb. Druce.*
32. Northants. Plain Woods, Druce.
34. West Gloster. St Vincent Rocks, E. Foster, *H.B.M.*
41. Glamorgan. Cold Knap, Wade; Caerphylly, Wade (33), *Hb. Druce.*
48. Merioneth. Harlech (132, 135, 136, 139, 141); Dolgelley (687), Barton; Harlech, Ridley, *H.B.M.*; Harlech (132, 135, 136, 139, 141, 173); Fairbairn Sands (132); Arthog (137), Barton, *Hb. Druce.*
49. Carnarvon. Criccieth, Bailey.
65. North West Yorks. Wensleydale, Cotton, *H.B.M.*
69. Westmorland. Wilmott (1136), *H.B.M.*
74. Wigtown. Newton Stewart, Mull of Galloway, Druce.
79. Peebles. Glen, Druce.
80. Roxburgh. Vale of Bowmont, Brotherston, *H.B.M.*
82. East Lothian. Ferrygate Links, Druce.
85. Fife. Burntisland, Agnes Thomson.
89. East Perth. Ben y Vrackie, Druce.
90. Angus. Sands of Barry, Gardiner, *H.B.M.*; do., Druce.
91. Kincardine. Banchory, Druce.
92. South Aberdeen. Ballater, Druce.
95. Moray. Forres, Druce, *H.B.M.*; Culbin Sands, Druce.
98. Argyle. Mull, Ross, *H.B.M.*
105. West Ross. Big Sands, Bealach nam Bo, Loch Luichart, Gairloch, Druce.
107. East Sutherland. Dornoch Links, Standen, *H.B.M.*

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*This is described on the label as *T. Lintoni* Domin. I had not known this name before.

108. West Sutherland. Wilmott (1902), *H.B.M.*; Melvich, Marshall, as *prostratus*; Ben Hope, Betty Hill, Druce.
109. Caithness. Thurso, Druce.
112. Zetland. Hoo Hill, Balta, Druce.
Ireland. Galway. Clifden. Clare. Black Head. Sligo. Ben Bulben, Druce. Antrim. Portrush, Atkins, *H.B.M.*; do., Druce.

Though the races *pycnotrichus*, *neglectus* and *britannicus* vary in the leaf-breadth similarly to *T. Serpyllum*, I hesitate to create new names for these insignificant forms. In the races of *Serpyllum* sp. coll. it often happens that some of the prostrate shoots end in an inflorescence, also that isolated individuals have no sterile runners, but such plants can always be clearly distinguished from the races of *Thymus Pulegioides* sp. coll. by their low-growing flowering shoots and their small hard leaves. Moreover the races of *Thymus Serpyllum* sp. coll. are never so completely goniotrichous as are the races of *Thymus Pulegioides* sp. coll.

We are indebted to Dr S. H. Vines, F.R.S., for translating Dr Ronniger's notes. The Secretary has arranged the various localities in the comital sequence of Watson's "Topographical Botany."

SOME ENGLISH ALCHEMILLAS.

ORIGINAL DESCRIPTIONS AND DISTRIBUTION IN THE REGION OF THE SWISS FLORA.

By F. Jaquet.

A. hybrida Mill.

A. pubescens Lam. *A. vulgaris* L., var. *subsericea* Gaud., K. *A. minor* Bus. Notes 1891, non Huds.

Plant rather strong-growing, leafy, spreading, light coloured. Leaves 9-lobed, rather wavy, silky and somewhat shining beneath. Lobes of summer leaves parabolic, slightly truncate, with short teeth, rather wide, obtuse. Upper branches divaricate. Glomerules very compact. Pedicels very shaggy, slightly shorter than the urceoles, which are at first campanulate, afterwards spheroid-turbinate.

Plentifully scattered over meadows and bare, sunny pastures, from the hilly districts almost to the snow line at 2500 metres. From the Maritime Alps to the Tyrol, in Carinthia, the Vosges, Central France, Pyrenees, Asia Minor.

[I discovered this as a native plant in Britain before the year 1892, when it was sent to M. Buser, but having lost his eyesight M. Buser is unable to give me the locality or the specimen (see *Rep. B.E.C.* 23, 1926). Hambledon Common, Surrey, Mrs Wilde, almost certainly from a neighbouring garden (*Rep. B.E.C.* 283, 1918). G. C. Druce.]

A. PRATENSIS Schmidt.

A. vulgaris L. et auct. *A. vulgaris* L., ssp. *pratensis* (Schmidt) Camus, var. *typica* R. Keller.

Plant tall, slender, often very large, of a bright yellowish colour. Summer colouring (edges of leaves, stalks) brick-red. Stems and petioles shaggy throughout, up to the stipulines. Leaves rounded, flat (folded in the living plant), glabrous beneath, with longish lobes, sub-triangular or parabolic, 1/3 of their radius, more rarely shorter and rounded, ¼ of their radius, serrate. Stipules short and narrow, not coloured, soon disappearing. Stems fistular, flattening under pressure, erect, terminated by loose, leafy, often diffuse panicles. Flowers small, yellow, stunted, glabrous, or having a few hairs at their base. Urceoles at first narrow-obconic, later obovate or spheric-turbinate, veins well marked. Sepals open and wavy after fertilisation, showing the much exserted styles. Pedicels divergent. This and *effusa* are our largest species the stems often being half a metre long, with voluminous clusters of yellow flowers, making a pleasing sight. Notwithstanding its size the plant is delicate and dries quickly.

It appears on the meadows of the slopes of the middle region, is abundant in the lower grassy pastures, becomes rare among the Rhododendrons, but reaches, in a stunted form, our mountain chains up to the bare pastures under the snow line region at 2500 metres.

[Tring, Herts; Pyrton, Oxon; North Dean, Tring, Bucks, DRUCE; Caswell, W. Gloster, BAILEY; Crydach, Brecon, DRUCE; Dolgelley, Merioneth, BARTON; Athelstanes Wood, Hereford, LEY; Buxton, Derby, WHITE; Albrighton, Staffs; Accrington, Lancs; Westmorland; Baildon, Jervaulx, Greenfield, Yorks; Silverdale, Lake Lancs; High Force, Durham; Fallodon, Northumberland, DRUCE; Melrose, Roxburgh, Miss PALMER; Dollar Law, Peebles; Selkirk; Creag Mhor, Lawers, M. Perth; Dunning, E. Perth; Callander, W. Perth; Dun Bridge, Angus; Banchory, Strachan, Kincardine; Fochabers, Elgin; Ballater, S. Aberdeen; Corgarff, Huntly, Alford, N. Aberdeen; Arisaig, Westerness; Gairloch, Braemore, W. Ross; Black Mt., Antrim, DRUCE.]

A. CURTILOBA Bus.

A. vulgaris L., ssp. *pratensis* (Schmidt) Camus, var. *curtiloba* (Buser) R. Keller.

Plant from 30 to 40 cm. high. Stems few (1-2), upright, erect. Basal leaves large, reniform. Lobes 9, wide, shallow, 1/5-¼ of their radius. Stipules narrow, but up to 7 cm. long. Leaves glabrous above, bluish-green, pale green beneath, hairy only on the veins (in the Swiss plant); teeth 8-9 on each side, medium-sized, wide, shallow, rounded-ovate, mucronate, passing gradually into wide but short stipuliums, the latter in the form of a small collar, unequally and coarsely crenulate-dentate. Inflorescence lax, diffuse, lower peduncles 1½ to 4 times as long as the sepals; flowers deep yellowish-green, glabrous, sepals very wide-oval, acuminate. Divisions of the calicule large, similar to the sepals. Styles not exceeding the stamens.

Slopes among tall herbage in the subalpine and alpine regions from 1450 metres. Very rare. Switzerland, Friburg, Savoy. The chief habitat with us of this beautiful species is on the steep slope of the declivity west of the Dent de Lys. It is found in great abundance all along the slope descending from the summit towards the chalet of the Joux Vertes above, 1468 metres. In the very few stations where we noticed it formerly it appears in the very smallest quantities and in some years is not even to be found at all . . . . F. Jaquet, Contribution vii., 1905, p 15.

Goathland, N.E. Yorks, 1895, Miss M. MENNELL; Banchory, Kincardine, DRUCE.

A. MINOR (Huds.) Schinz & Keller.

A. filicaulis Buser.

Plant medium or small, slender, dry, bright glaucous green, with slight summer colouring. Leaves reniform or roundish reniform, flat, upper with triangular lobes, 1/3 of the radius, with scattered hairs or rather shaggy on both sides (rather more so above than below), bristly on the nerves. Lower stipules vinous red. Serration often unequal. Stems bristly in the lower half, glabrous in the upper (caulis semipilosus), slender, stiff, wiry, ascending. Petioles hairy all over. Upper stem leaves deeply cut, spreading. Inflorescence scanty, with short branches, flowers more or less clustered, large, yellowish. Urceoles elongated, at first obconic, later pyriform, inferior scorpioid, generally hairy or bristly, the upper smooth. Sepals relatively large, broadly oval or triangular-oval shaped. Calicule well developed.

Xerophilous species, widely spread. Dry grassy places, bare pastures, exposed sunny borders of woods from the hilly region almost to the edge of the snow line.

[Odiham, N. Hants, Miss PALMER; Finchingfield, N. Essex, VAUGHAN; Denhamburn, Middlesex; Beechwood, Herts; Bagley, Berks; Wroxton, Park Corner, Oxon; Brickhill, Chesham, Bucks; Woburn, Beds; Wakerley, Whittlebury, Northants; Stanner Rock, Radnor, DRUCE; near Tintern, Monmouth, SHOOLBRED; Dolgelley, Merioneth; Llanberris, Carnarvon; Blockley, Worcester, DRUCE; Packington, Warwick, Miss PALMER; Cleevebank, Hereford, PURCHAS; Patshull, Staffs, Lady JOAN LEGGE; Matlock, Derby; Scrapton, Knighton, Leicester; Greetham, Rutland, HORWOOD; Greenfield, Yorks; Silverdale, Lake Lancs; St Mary Isle, Kirkcudbright; Wigtown; Moffat, Dumfries; Glen, Peebles, DRUCE; Dolphinton, Midlothian, TEMPLETON; Glen Tilt, E. Perth, TEMPLEMAN; Cortachy, Angus, DRUCE; Arran, SOMERVILLE; Setter, Syredale, Kirbister, Orkney; Tingwall, etc., Zetland; Ballyvaughan, Clare; Garrontower, Antrim; Morley Bridge, Kerry; Cave Hill, Belfast, Antrim, DRUCE.]

[I should write this *A. minor* Huds. or em. Schinz & Keller.—Ed.]

A. PASTORALIS Bus.

A. vulgaris L., var. *pastoralis* (Buser) Schinz & Keller.

Plant of a medium size, robust, erect, of a bluish-green when fresh, dull brownish when dry, summer colouring deep reddish-brown. Leaves rounded, folded in a keel in the living plant, flat when dry, rather thick, shaggy on the two sides (more strongly so beneath), more or less silky when young, hairs loosely appressed, often covered with brown spots. Stems and petioles shaggy as far as the stipulium. Lobes of the lower leaves arcuate, ¼ of the radius, those of the large leaves semi-oval or parabolic, 2/5 of the radius. Teeth (characteristic) rather small, rather straight and very equal, conic or mammiform, a little connivent, lateral tooth of the large leaves often elongated, incurved, forming a small corner. Stems more or less erect, slender; stem leaves small. Stipuliums with coarse, almost digitate teeth. Flowers clustered, rather shortly stalked (pedicels as a rule shorter than the urceole), of a dull yellow, the inferior often bearded at the base, the upper smooth or almost smooth. Urceoles at first obconic, a little longer than the sepals, at length turbinate or narrowly campanulate. Styles hidden.

Probably the commonest species of the Vulgares, it is to be found in every rather dry, bare pasture, in short turf, often in extraordinary quantities. It grows at its best in the hilly and subalpine region; from there it mounts on warm slopes up to the snow-line and descends frequently to the plains at the outlets of the mountain valleys and sometimes along the rivers even to the sands of the Rhone in Valais. When the plant is not very large it has been up to now with us frequently confounded with *pubescens* Lam. either as *montana* W. or as *hybrida* L., but a glance at the inflorescence is sufficient to distinguish the two plants.

[Arley Castle, Worcester, DRUCE and Lady JOAN LEGGE; Lansdon Beck, Durham, 1903, HUME (see Bab. *Man.* 579, 1922).]

A. SUBCRENATA Bus.

A. vulgaris L., var. *subcrenata* (Buser) Camus.

Plant medium sized or rather large but slender, weak, small in all its parts and withering quickly, of a bluish-green, yellowish-green in the young state, early summer colouring coral-red, with sparse down, making it appear glabrous at first sight. Leaves round, strongly undulate, with lobes rather broad and deep, ¼-2/5 of the radius, semi-obovate or semicircular, those of the large leaves parabolic, hairy on the two sides, but only on the folds and edges above, more rarely over the whole surface. Teeth short and broad, coarse crenulate-mammiform in the large leaves. Petioles shaggy all over. Stipules long and straight, colourless. Stems spreading or arcuate-ascending, slightly shaggy as a rule as far as the lower branches. Stem-leaves relatively well developed, with deep divergent lobes; stipuliums with numerous sharp teeth; the scant inflorescence is relatively leafy and elegant. Flowers close together, small, stunted, smooth, or the lowest with a few hairs at the base, of a bright yellow or greenish. Urceoles campanulate, equalling the sepals, at length turbinate-obovoid. Sepals upright after flowering and concealing the styles.

Meadows, grassy pastures, borders and clearings of woods in the subalpine region. A good fodder plant. One of the most widely spread species, often occurring in large colonies.

[Near Tintern, but in Gloucester, Druce (see *Rep. B.E.C.* 113, 1926); Aviemore, Easterness, 1922, Salmon.]

A. tenuis Bus.

A. vulgaris L., var. *tenuis* (Buser) Schinz & Keller.

Plant medium sized, rather graceful, squat, dull green. The earliest petioles glabrescent. Clothing of the lowest petioles and of the stem bristly. Lowest stipules vinous-purple. Cauline leaves cut to 1/3, with slender teeth; upper stipuliums in the form of a finely toothed collarette. Inflorescence narrow; branches spreading at acute angles; flowers fascicled, yellowish, small and narrow. Urceoles at first obconic, equalling the sepals and the pedicels or a little shorter than the latter, at length turbinate. Sepals broadly oval. Pedicels capillary.

Grassy pastures, borders of woods in the hilly and subalpine region, widely distributed and often abundant, occurring here and there up to the snow-line.

[Box Wood, Herts, Little, as *vulgaris* (see *Rep. B.E.C.* 113, 1926); Meall Greigh, Mid Perth; Sow of Atholl [? 89], Dalnaspidal, East Perth; by the Spey, Aviemore, Kincraig Bridge, Boat of Garten, Easterness, Salmon.]

A. alpestris Schmidt.

A. vulgaris L., ssp. *alpestris* (Schmidt) Camus.

Plant medium sized or large, but often very small or very large, rather slender, hardy and tough, of a bright bluish-green with a yellowish tinge in the young state. Leaves reniform or rounded-reniform, undulate, glabrous on the two sides, very ciliate, pale, a little glaucous beneath. Lobes rather broad, moderately deep, ¼ to 1/3 of the radius, those of the lower leaves rounded, of the upper triangular, dentate all round. Teeth medium sized, oblique oval or mammiform, narrowly acuminate, connivent, often very unequal. The earliest petioles glabrous, or all hairy or pubescent (silky in the young state) with loosely appressed hairs. Stipules in sunshine of a vinous purple, with large auricles. Stems arcuate-ascending or erect, straight, hairy or sub-pubescent at the base with loosely appressed hairs. Stem leaves medium sized, the lobes not divergent, with connivent teeth. Inflorescence rather broad. Flowers medium sized, yellowish, slightly elongated; urceoles at first obconic, equalling the sepals, at length obovoid. Styles sometimes visible, sometimes hidden.

A common and generally distributed species from the plains to the snowy region, still rather frequent in the valleys of the Glâne and in the environs of Friburg. As to the highest zones one may include the whole of the alpine pastures of the Canton and of Switzerland.

[Stanmore, Middlesex; Craig Cille, Brecon Beacon, Brecon, Druce: Arthog, Merioneth, Barton: Nant Francon, Carnarvon, Druce; Mor-ridge, Staffs, Routh and Jackson: Harlington, Derby, Druce; Clapham, Miss Todd; Ingleborough, Yorks; Penrith, Cumberland; Grassington, York, Cryer; Slodday, Broughton, Lancs; Patterdale, Westmorland; Teesdale, Durham; Edinburgh; Giffnock, Kelvinside, Renfrew, Druce; Cupar, Fife, Templeman; Gatehouse of Fleet, Kirkcudbright; Port William, Wigtown, Druce; Hopetown, Linlithgow, M'Taggart Cowan; Selkirk; Glen, Peebles; Thulachan, Blairgowrie, E. Perth; Lawers, Kenmore, etc., M. Perth; Rescobie, Dun Bridge, Cortachy, Angus; Strachan, Kincardine; Ballater, S. Aberdeen; Alford, N. Aberdeen; Kingussie, Easterness; Ben Nevis, Westerness; Ben Laiogh, Argyll; Sligachan,-Skye; Loch Maree, Cnochan, etc., W. Ross; Ben Garbh, W. Sutherland; Kirbister, Orkney; Balta Sound, Zetland; Ben Bulben, Sligo, as forma *truncata*; Ballycastle, Antrim; Formoyle, Londonderry; Ballyvaughan, Co. Clare; Waterville, Kerry, Druce.]

A. ACUTIDENS Bus.

A. vulgaris L., ssp. *alpestris* (Schmidt), var. *acutidens* (Buser) A. et G.

Plant slender but firm and tough, showy, of a rather shining green, a little yellowish. Root stout, almost woody. Leaves rounded, strongly undulate, coriaceous, subconcolorous, sub-opaque, glabrous or in the case of the upper silky at the folds above and at the exterior lobes below. Lobes rather deep, 2/5 to ½ of the radius, those of the lower leaves semi-obovate or semi-elliptical, terminating in a long corner with 2 to 3 teeth, those of the upper leaves parabolic-triangular, pointed, toothed all round. Teeth small or medium sized, very equal, finely pointed, connivent. Petioles all or in part furnished with loosely appressed hairs. Stems upright, strongly flexuous, tough, sub-hairy at the base. Stem leaves medium sized with rather deep lobes, spreading in the upper ones. Inflorescences diffuse. Flowers loosely glomerulate, rather large, turning yellow at maturity. Urceoles at first broadly obconic, a little shorter than the triangular sepals, oval and pointed, at length turbinate or turbinate-ovoid. Calyx and calicule well developed, recalling the Calycinae.

Alpine region: grassy, dry, well exposed pastures, notably at the upper limit of the Conifers.

[Near Grassington, Yorks; Cross Fell, Westmorland, Salmon; Balmuto, Fife, 1870, F. Stratton, as *vulgaris*, the earliest British example known; Ben Lawers, 1911, Druce and Ostenfeld; Lochan na Chat, M. Perth, 1913, Salmon; Glen Falloch, W. Perth, Marshall.]

A. GLOMERULANS Bus.

A. vulgaris L., ssp. *alpestris* (Schmidt), var. *glomerulans* (Buser) A. et G.

Leaves very undulate, sub-orbicular, with 9 to 11 lobes. Lobes broad, of medium size, those of the intermediate leaves semicircular, ¼ to 1/3 of the radius. Serration characteristic, rounded. Teeth as broad as long or twice as broad, ovate-rounded or mammiform, crenulate, mucronulate. Leaves rather thick, flexible even after drying, in the young state of a pale yellowish-green, when mature pale glaucous, with a narrow reddish brown border. Large summer leaves hairy on the two sides, sometimes sub-silky with appressed hairs. Petioles of the large leaves silky, the last very shining. Stipules broad and loose, brownish. Stems prostrate or arcuate-ascending, not flexuous, of a brownish red in the sun, pubescent for almost their whole length, often up to the pedicels, with appressed or lightly scattered hairs. Flowers clustered, rather short and broad, pale yellow. Urceoles at first broadly infundibuliform, equalling the sepals, at length turbinate. Sepals almost as broad as long, upright after flowering and showing the very exserted styles. Pedicels shortened.

Scarce in the subalpine region, more frequent in the alpine region. Often very abundant in bare and cold pastures, and in the snowy corries near the snow line.

[Glen Eunach, Easterness, 1917, ROFFEY; Ben Lawers, M. Perth, MARSHALL; Cairngorms, Easterness, SALMON; Lochnagar, S. Aberdeen, DRUCE.]

A. MONTANA Schmidt.

A. vulgaris L., var. *montana* (Schmidt) A. et G. *A. connivens* Bus. Plant very slender, elegant, of a clear deep green, rather shining. Leaves rounded, forming in the living plant a cup with the keeled folded lobes, flat when dry, coriaceous, marked with silky lines on the folds of the lower leaves, or silky above all over the lobes of the upper leaves, glaucous below, with shining nerves and with the exterior lobes silky. Lobes and serration the same as the preceding but with the lobes less deep, ¼ to 1/3 of the radius, the serration finer, the teeth smaller. Petioles covered with long and soft hairs, at first loosely appressed, at length upright or spreading. Stems decumbent, rough and narrow or arcuate-ascending towards the top, fistulose and becoming flat in drying, hairy or sub-shaggy up to the first branches, with the hairs half spreading. Stem leaves rather small, deeply (up to 2/3) incised, with narrow lobes, narrowed at the base, very spreading. Inflorescence large, with numerous flowers. Flowers rather small, like those of the preceding. Styles generally visible.

Subalpine and alpine regions, ascending rarely to the snowy region. A xerophilous species like the preceding, which it resembles, preferring dry pastures and open coniferous woods, often met with in scattered groups or in masses. Very widespread.

[Beinn a Chroin, M. Perth, MARSHALL; Dalnaspidal, E. Perth, SALMON.]

A. COLORATA Bus.

A. hybrida Mill. (*A. pubescens* Lam.), var. *colorata* (Buser) R. Keller.

Plant slender, with rather upright stems, of a dark greyish colour, summer colouring dark. Leaves often 7-lobed, very undulate, smaller than in *A. pubescens* and less shaggy, not shining, the earliest almost always glabrous. Lobes of the summer leaves shortened, ± truncate. Teeth deeper, narrower and more pointed than in *A. pubescens*. Pedicels glabrescent, elongated, glomerules therefore laxer, urceoles a little more elongated, turbinate. Interior of the flower of a deep purple colour at maturity.

Not less widely distributed than *A. pubescens* but less abundant, in patches as if practically independent of altitude, preferring siliceous ground (not found in the Friburg Alps), extending from the hilly region to the snowy region at 3000 metres. Valais, Tessin, Zurich, Grisons—Savoie.

[Cave Hill, Belfast, Antrim, DRUCE and STEWART.]

A. coriacea Bus.

A. vulgaris L., ssp. *coriacea* (Buser) Camus, var. *typica* A. et G. Plant large, strong, of a glaucous colour, opaque (resembling the colouring of the leaves of *Gentiana lutea*). Stems and petioles wholly glabrous. Leaves often very large, rounded, undulate in the living plant, with small folds in the angles in the dried plant, coriaceous, thick. Lobes semicircular or parabolic-rounded, ¼ to 1/3 of the radius, crenulate-dentate all round. Teeth 7-10. Stems more or less upright, half as long again as the leaves. Inflorescence narrow. Flowers loosely fascicled, rather large, greenish. Urceoles, when mature, turbinate-ovoid or ovoid, almost twice as long as the short sepals. Styles hidden.

In the hilly region in damp meadows, scrubby places, clearings, on slopes among tall herbage. Frequent.

[Roadside near Friockheim, Angus, R. & M. CORSTORPHINE (*Rep B.E.C.* 342. 1915).]

A. Salmoniana F. Jaq.

Plant small or medium in size, tinged with a decided bluish-green, but later becoming purplish or pale yellow. Basal stipules lightly tinged with pink, glabrescent. The earliest petioles with a slight covering of upright spreading hairs, the later more strongly bristly with hairs spreading horizontally. Leaves rather small, 7-9 lobed, lobes 1/3 to ¼ of the radius, with rather fine regular teeth, very ciliate and tinged with brown at the tip on the upper surface, oval, acute. Leaves hairy, more strongly so above than below, with appressed hairs, silky on the nerves, the large summer leaves becoming almost completely glabrous beneath, thin but rather firm. Stems rather stout and straight, bent at the foot, attaining twice the length of the leaves, slightly bristly on the lower half or two-thirds, quite glabrous higher up, often here and there tinged with a dirty violet as in the stem leaves, the teeth of which are rather acute and connivent; the upper leaves, as well as the stipuliums, are rather deeply and irregularly incised. The branches form very sharp angles with the stem, are twice as long as the stem leaves, terminating in 2-3 small compact corymbs with rather large flowers 4½ to 5 mm. in diameter. Pedicels upright or slightly recurved, shorter than the urceoles in the upper flowers, longer in the lower. Urceoles narrow, obconic, glabrous, or with a few appressed hairs. Calyx segments oval-triangular, upright after flowering, ciliate, with very few long hairs. Divisions of the calicules half the width of the sepals and ¾ of their length. Flowers of a dull green, turning slightly yellowish-green.

Among calcareous rocks in Cumberland in the North of England. Leg. C. E. Salmon.

This plant recalls the Splendentes in its growth, form, colouring and structure of its leaves and stems but must be placed, on account of its other characters, among the Heteropodae, beside *A. tenuis* Bus.

A. FIRMA Bus. apud Magnier Scrinia Fl. Sel. 1893, 279.
"Species of medium size, rather strong, rather clustered, of a beautiful glaucous green, summer colouring deep vinous red. Lobes 9, 2/5 of the radius of the limb, rather wide apart, with lateral incision short but distinct. Teeth large. Leaves glabrous, whitish-green below. Stems straight, rough, feebly hairy at their base and on the petioles of the summer leaves, hairs loosely appressed. Inflorescence rather close. Flowers, like those of *glaberrima*, large. Sepals equalling the urceoles. General impression that of a luxuriant *glaberrima* with the characters indistinct. 'It seems to me to come midway between the Vulgares and *glaberrima* = *fissa* Schummel' (Rapin in Sched. under *fissa*). Grassy pastures among the willows and the rhododendrons, in forests among the arollas and larches of the alpine region . . . . Very widely spread in the Vaudoise and Friburg Alps, the Bas-Valais and the Bernese Alps, 1300-1900 (-2200m.)." Original description by the namer, R. Buser, in H. Jaccard Catal. Flore Valaisanni, p. 116. *A. firma* belongs to the section Calycinae. It is up to the present the only species that I have seen of that section from Great Britain.

[Ben Lawers, M. Perth, 1913, C. E. SALMON, as *acutidens*.]

ADVICE TO COLLECTORS.

1. Do not gather too young. When without petals there is no necessity to gather in two states—flowers and fruit. The best condition for gathering is when approaching maturity. Then the inflorescences and the calyx tubes have acquired their definite shape which is often characteristic. Nothing is more deceptive than the young state with its compact inflorescence resembling a tiny cauliflower which gives one no idea of what the adult plant will be like. How many erroneous descriptions—statements of "flowers in glomerules"—are made because they are founded on young conditions whereas in mature states the same plants would have shown a diffuse and corymbiform inflorescence! When travelling about one is obliged to gather what one finds but when one may choose the time it is better to gather rather late than too early.

2. Preserve the whole plant. There are some Alchemillas (Heteropodae) in which the spring leaves are glabrous whilst the large summer

leaves are strongly hairy. When mounting the specimens, in stripping the plants of these earliest leaves because they are withered and unsightly, one removes one of the essentials for determination. On the other hand, it is unnecessary to press the underground parts in their entirety.

3. Arrange the leaves suitably. Differences between allied species being frequently slight and inconspicuous it is important not to make these still more difficult to discern by mounting a defective specimen. Therefore care should be taken to display the summer leaves as well as the stem leaves and stipuliums.

4. Choose specimens of normal growth. The smaller the specimen is, the more difficult is its specific determination. Where the climate is dry and the habitat deficient in moisture, resulting in a corresponding shrinkage in size, one can avoid the difficulty by looking for plants in a more favourable locality.

The drying of Alchemillas is very easy. These plants, if they are put into the press dry and if the paper itself is very dry, lose nothing of their grace or colour in the course of drying—in fact these characteristics are often accentuated. Provided one proceeds with a little care Alchemillas never turn black in the press.

November 1927.

EXPERIENCE AND OPINION.

By E. Almquist.

In the last *Reports* I spoke of newbred plant species and of Nature's way for producing species. The wild Linnean species are not at all arbitrary, they are real, limited by Nature and commonly quite constant. In nature growing plants fit in with their environment. All forms that do not agree with their environment disappear in a short time. Plants produce an immense number of seeds, and the same forms grow everywhere in favourable localities. New forms are bred by crossing or mutation. The spontaneous plants cross remarkably seldom, a great many grow apart from their relatives, for which reason they only cross accidentally. The kindred ones often live together near human dwellings, nevertheless they do not cross spontaneously (Alexis Jordan, 1873). On the other hand, newly imported forms often cross with meeting species, but most of these hybrids do not spread. Wild plants often degenerate in culture, become sterile, or lose some important organs. By this mutation or single variation we observe as a rule only one character altered. However, with defective nutrition, some bacteria, e.g. *Spirillum cholerae* gradually lose several of their characters for good. New crosses and mutations really do not cause great changes in our Floras. New forms with power to spread are very rare. The list of newbred Swedish species is poor. De Vries did not reach much further. This experience proves the insignificance of the movement. In these examinations it is quite necessary to separate the constant forms from the varieties that are not thoroughly hereditary. Among higher plants, but more especially in bacteriology, we very often come across varieties that seem to be constant, but which revert to the original form in suitable culture. I call this variation relative inheritance.

The related facts belong to our experience. We claim that all important facts are to be found in scientific works. Nevertheless, we look in vain, for example, for the comprehensive cultures of Linné and Jordan. This manner is not occasional, but in certain parts of biology rather common Some scientists prefer interpretation to observation. Thus theories prevail and facts are subordinate. This bad custom continues throughout periods. Sometimes all varieties were considered to be beginning new species, or the spontaneous allogams were all hybrids, or the species were created by repeated mutations, &c. The fashion to-day seems to be some kind of Lamarckianism. An important work insists that only the individuals, not the species, are real! Even in bacteriology dialectics prevail, but in the year 1927 two new text books were published by Philip Hadley in U.S.A. and E. Gotschlich in Germany. Both find it not at all satisfying to exclude all observed bacterial forms that do not agree with this convenient doctrine, and which prefer interpretation to observation. We hope for a new era in science on that account.

But it is not only biology that suffers to-day. I read lately in my English newspaper as follows:—"Our politicians are so imbued with the fallacy that progress and democracy are synonymous terms, so bemused with catchwords, that they lose their sense of reality." Thus it is the same in science and politics! The well-known Anglo-Saxon instinct feels at present much ado about the common sense. It gains the victory without doubt. The fear will be actual only when the instinct disappears from our cultivated nations.

So in science as in politics, experience and facts are the masters and must prevail against opinions, theories, doctrines, pia desideria, and interpretations. To-day these are a powerful menace to facts, but they must give way to experience.

PLANT NOTES.

By Dr E. Drabble.

Ranunculus Lenormandi × peltatus. Tresillian, near Truro, Cornwall, April 1908, Hilda Drabble. This agrees exactly with the figure and description in *Journ. Bot.* 39 (1901), p. 121, tab. 420, and also with material collected at Copthorne Common in May 1904 (E. D.).

Ranunculus peltatus L., var. truncatus Koch. Grange Hill, Essex, and Mitcham Common, Surrey, May 1904. These plants are the best *truncatus* I have seen from this country and are far more characteristic than the specimens so named in Wirtgen's Herb. Pl. Select. Fl. Rhen., ed. ii., fascc. 12 and 17, in my own herbarium.

Papaver Rhoeas L., var. Pryorii Druce. Misson, Notts, August 1909.

Papaver Rhoeas × dubium. Certain plants which have been thus named seem to me to be *P. dubium* with spreading hairs on the peduncle, e.g. plants collected by Mr C. E. Salmon at Chilworth, Surrey, July 27, 1918. Just as in *P. Rhoeas* we have hairs adpressed (var. *strigosum*) or spreading (the common form), so in *P. dubium* occur plants with hairs adpressed (the common form) or spreading (Mr Salmon's Chilworth plant). In the same way *P. hybridum* has hairs spreading or adpressed according to Rouy and Foucaud Fl. Fr. t. i, p. 161.

Papaver Argemone L., β glabratum Rouy & Foucaud (sub-var. glabratum Coss. et Germ. Fl. Par.), "capsules munies seulement de quelques soies au sommet." Flamborough, Yorks, July 1907, growing with the typical plant, of which it appears to be a mere state.

Radicula Nasturtium Dr., var. siifolium (Reichb.). Flamborough, Yorks, July 1907. The best examples we have seen; var. microphyllum (Boenn.). Hightown, Lancs. I think both these are mere states.

Erophila stenocarpa Jord. Claygate, Surrey, May 1865, H. C. Watson, in *Hb. E. & H. Drabble*.

Erophila brachycarpa Jord. Wroxham, near Stalham, Norfolk, April 1909, Miss M. Pallis; Milltown and Fallgate, Derbyshire; Netherton, near Frodsham, Cheshire, March 1867 (no collector's name); Lancing, Sussex, April 1872, T. Comber. All in *Hb. E. & H. Drabble*.

Cochlearia danica L. This plant in cultivation retains its characteristic features unmistakably. The leaves become larger, but the shape of the leaf is unchanged.

Cochlearia Armoracea L. Abundantly established on the sandhills at Wallasey, Cheshire, where the form with deeply pinnately lobed leaves occurs as well as the entire-leaved form.

Sisymbrium Sophia L. Gringley, Notts, August 1908.

Brassica Rapa L., with flowers in a long raceme instead of the usual corymb. Waste ground, Finchley, Middlesex, July 1912.

Lepidium bonariense L. Birkenhead, Cheshire 1907.

Saponaria officinalis L., var. puberula Weirzb. Hightown, Lancs, September 1905.

Lychnis Githago Scop., var. nicaeensis Willd. Wallasey, Cheshire, 1906. A state, I think, but a very striking one.

Silene conoidea L. Waste ground, Upper Brighton, Cheshire, July 1907.

Cerastium vulgatum L., var. holosteoides Fr. Wallasey Sandhills, Cheshire, May 1907.

Sagina maritima G. Don, var. densa (Jord. Obs. iii., tab. 3 B.). Leasowe, Cheshire, June 1908; var. debilis (Jord. Obs. iii., tab. 3 C.). Hightown, Lancs, June 18, 1887. A. E. Lomax in *Hb. E. & H. Drabble*.

Spergularia rupicola Lebel, var. glabrescens Bréb. Bidston, Cheshire; Filey, Yorks.

Spergularia media Pers. = marginata Kittel, var. glandulosa Druce. Swanscombe Marshes, Kent, July 1903; Yarmouth, Isle of Wight, July 1913.

Hypericum linariifolium Vahl, var. approximatum Rouy. Beaumont, Jersey, July 1894, J. D. Gray in *Hb. E. & H. Drabble*.

Tilia platyphyllos Scop. Langwith, Derbyshire.

Geranium sanguineum L., var. prostratum (Cav.). Perranzabuloe, Cornwall, July 1910.

Geranium molle L., var. aequale Bab. Hendon, June 1912.

Medicago sylvestris Fries. Morfa Nevin, Carnarvonshire, September 1926. This plant was sent to me by Canon F. L. Shaw, who writes—"It grows in great profusion in a pit near to a cornfield and, from the quantity of it, it must have established itself years ago. I can only think that years ago the farmer must have purchased some East Anglian seed, and as the pit is uncultivated it gave the plant an opportunity to establish itself."

Medicago falcata L., var. tenuifoliata Vuyck. Cornfield weed at Spital, near Chesterfield, Derbyshire, June 1918.

Trifolium pratense L., " var." parviflorum Bab. Totland, Isle of Wight; Gringley, Notts, August 1914.

Anthyllis maritima Schweigger. St Ives, Cornwall, July 1908.

Lotus corniculatus L., var. hirsutus Rouy. Freshwater Downs, Isle of Wight.

Lotus uliginosus Schkuhr, var. glabriusculus Bab. Spital, near Chesterfield, Derbyshire; Truro, Cornwall.

Lathyrus montanus Bernh., var. tenuifolius Asch. Linacre, Derbyshire.

Crataegus monogyna Jacq., var. laciniata (Wallr.). Common round Finchley, Middlesex.

Crataegus monogyna Jacq., var. leiocalyx Druce (=var. glabrata Sond.). Freshwater, Isle of Wight.

Crataegus oxyacanthoides Thuill., var. eriocalyx Druce. Mill Hill, Middlesex, June 1909.

Sedum Fabaria Koch. Near Grasmere, Westmorland, August 1906.

Lythrum Salicaria L. Meols, Cheshire, 1905, and onwards, a peculiar form with the flowers generally solitary in the axils and the lower bracts leaf-like. This plant differs from β *gracile* DC. Cat. Herb.

Monspel., p. 123 (Grenier & Godron Fl. Fr. i., p. 593), in being only slightly downy, instead of "pubescente-veloutée, presque blanchâtre." Rouy & Fouc. Fl. Fr., viii., p. 159.

Epilobium Lamyi Schultz. Finchley, Middlesex, July 1912; Freshwater, Isle of Wight, 1924, and onwards.

Epilobium tetragonum L., em. Curt. Finchley, Middlesex, July 1909.

Epilobium lanceolatum Seb. & Maur. Launchy Ghyll, Thirlmere, Cumberland, August 1908.

Circaea lutetiana L., var. cordifolia Lasch. Spital, near Chesterfield, Derbyshire.

Conopodium majus Loret. A very striking form with the stalks of the partial umbels and of the flowers so short that the whole compound umbel forms an almost spherical head about ½ inch in diameter. There was no sign of fungal or insect infection. The plant was sent to me from Ashbourne, Derbyshire, by Canon F. L. Shaw.

Caucalis nodosa Scop., var. pedunculata (Rouy) Druce. Finchley, Middlesex.

Scabiosa Succisa L., var. hispidula Peterm. Carbis Bay, Cornwall, August 1905; var. glabrata Schultz. Wythburn, Cumberland, August 1906. These seem to be merely states, respectively more or less hairy than the usual plant.

Galinsoga parviflora Cav. East Barnet, Middlesex, September 1912.

Matricaria inodora L., entirely without ray florets. A particularly large and well developed plant, Chesterfield, Derbyshire, September 1925.

Artemisia vulgaris L. Hooker, *Stud. Flora*, ed. iii., and Rouy, *Fl. Fr.* viii., describe the leaves as glabrous above. I have plants from Bridlington, Yorks, with leaves distinctly hairy on the upper surface. These may come under var. vestita Corb. Fl. Norm. (β *canescens* Rouy Fl. Fr. viii.).

Cirsium arvense Scop., var. mite Koch. Finchley, Middlesex, September 1909; Staveley, Derbyshire, September 1902; var. vestitus Koch. Chesterfield; var. integrifolius Wimm. & Grab. Fl. Siles. Finchley, Middlesex.

Onopordon Acanthium L. Misson, Notts, August 1908.

Serratula tinctoria L., var. integrifolia Koch. Llanberis, Carnarvonshire, August 1871 (no collector's name).

Lapsana communis L. With green corollas, Totland Bay, Isle of Wight, August 1927.

Crepis capillaris Wallr. (virens L.), var. diffusa (DC.). Chesterfield, Derbyshire; Sherwood Forest, Notts; Alum Bay, Isle of Wight; var. anglica Druce & Thellung. Barlow, Derbyshire; Wallasey and West Kirkby, Cheshire; Totland, Isle of Wight.

Hypochaeris glabra L. Totland, Isle of Wight, in a very sandy field, September 1925. Plants over 50 cms. in height; leaves nearly glabrous, large, up to 13 cms. in length by 2 cms. in width; stems much branched with several small scale-leaves widely spaced on the branches;

inflorescence axes considerably thickened below the capitula; capitulum very short and stout, about 1 cm. in length; fruiting head large like that of *H. radicata*; outer fruits without beak, inner beaked, fruit and pappus nearly 2 cm. in length. The plants differed remarkably from the ordinary typical form which grows in quantity in the neighbourhood (on Headon Hill). Clearly the plant has much in common with that mentioned in *Rep. B.E.C.* v., pt. 3, 288, from Pyrford, Surrey. It appeared possible that it was a distinct variety. Fruits were therefore sown in the following spring in a cleared bed in the garden. These gave rise to large plants with upwards of twenty flowering stems spreading from the base and with broad capitula, but otherwise approaching the usual form. These were allowed to seed themselves, and in 1927 grew amongst other vegetation with the result that they have approached still more nearly to the normal small form. It is therefore unlikely that the plant is a genetically distinct variety. A mere state though a very striking and unusual one seems to be indicated.

Hypochaeris glabra L., var. rostrata C. & G. (= var. Loiseleuriana Godr. = H. Balbisii Lois.). With all the fruits beaked. New Romney, Kent, 1875 (no collector's name).

Hypochaeris radicata L., var. leiocephala Regel. (= var. typica Beck.). Involucral bracts glabrous and without black pectinations on the middle of the outer surface. Chesterfield, Derbyshire; Highwood Hill, Middlesex; Freshwater, Isle of Wight. Var. hispida Peterm., involucral bracts roughly hairy and generally but not always with pectinations down the middle of the outer surface. Freshwater, Isle of Wight.

Vaccinium Myrtillus × Vitis-idaea. Eastmoor, Derbyshire.

Calluna vulgaris Hull, var. incana Reichb. Edwinstowe, Notts.

Symphytum peregrinum Ledeb. Hasland, Derbyshire; Finchley, Middlesex.

Myosotis versicolor Sm., var. dubia Arr. (*M. dubia* Arrondeau Cat. Pl. Morbihan, p. 70; sub-var. *dubia* Rouy Fl. Fr. x., p. 327). A striking colour variety; flowers white (not cream or yellow as usual), changing to blue. Freshwater Downs, Isle of Wight.

Echium vulgare L. (i.) Flowers white, (ii.) flowers pink, (iii.) flowers pale blue, (iv.) flowers dark blue. In all cases these were the final colours at maturity. Near Truro, Cornwall, July 1910.

Solanum Dulcamara L., var. tomentosum Koch. Reigate, Surrey; Woodside Park and Finchley, Middlesex; Freshwater, Isle of Wight.

Verbascum nigrum L., var. tomentosum Bab. Mullion, Cornwall, August 1904, exactly like the Channel Islands plant.

Linaria vulgaris L., var. latifolia Bab. Lizard, Cornwall, August 1904; Whaley and Roseland Wood, Derbyshire, August 1909, E. & H. Drabble; Northfleet, Kent, August 1852 (as *speciosa* Ten.), J. T. Syme.

Scrophularia nodosa L., var. bracteata Druce. Romford, Essex, 1913, Miss A. E. Cook.

Scrophularia aquatica L., var. pubescens Bréb. Freshwater, Isle of Wight; by Thames at Kew; Spital, near Chesterfield, Derbyshire. Is not this the common form? I have glabrous-leaved plants from St Osyth and Truro.

Scrophularia aquatica L., var. appendiculata Mérat. Common at Freshwater, Isle of Wight.

Veronica Chamaedrys L., var. lamiifolia Beck. Spital, near Chesterfield, Derbyshire, with large leaves, the upper ones petioled and cuneate based. I do not think that any distinction can be made between *lamiifolia* Beck. and *Randolphiana* Hayne based on the opposite or alternate position of the racemes.

Scutellaria galericulata L., var. pubescens Mutel. Spital, near Chesterfield, Derbyshire; var. leiosepala Druce. Loe Pool, Cornwall, August 1904.

Prunella vulgaris L., var. nemoralis Béguinot. Freshwater, Isle of Wight. Merely a luxuriant state.

Plantago Coronopus L., var. pygmaea Lange. St Ives, Pentire, Perran, Carbis Bay, Lizard, Cornwall; Leasowe, Cheshire; Rottingdean, Sussex; Freshwater, Isle of Wight; var. ceratophyllon Rapin. St Ives, Cornwall. Both merely states, we believe.

Plantago maritima L., var. pumila Kjellm. Carbis Bay; var. latifolia Syme. St Ives and Carbis Bay, Cornwall. Both states, we believe.

Plantago lanceolata L., var. sphaerostachya Roehl. Hady, near Chesterfield, Derbyshire; Helvellyn, Cumberland; var. elliptica Druce. St Ives, Cornwall; Finchley, Middlesex; Scarborough, Yorks. A very curious form of *lanceolata* was found at Shirebrook, Derbyshire, in August 1913. From each of the two spikes which were otherwise normal, had grown vegetatively a new plant of the *sphaerostachya* type—quite similar to the plants from Helvellyn. Thus an ordinary *lanceolata* produced vegetatively two *sphaerostachya* plants on the inflorescences, lifted well above the surface of the earth with which they did not form any rooting connection.

Plantago major L., var. intermedia Syme. Lizard, Cornwall; Wallasey, Cheshire; Norton, Isle of Wight. I agree entirely with E. S. Marshall in regarding the plant named *P. major* L., var. *nana* Tratt. [Ref. No. 325] by W. C. Barton, and distributed through the Wats. B.E.C. (*Report* 1917-18, p. 69) as merely a starved condition of var. *intermedia* Syme.

Chenopodium leptophyllum Nutt. Spital, near Chesterfield, Derbyshire, fruiting a fortnight later than *C. album* with which it grows.

Chenopodium Botrys L. Calow, Derbyshire, a wayside weed.

Chenopodium polyspermum L. (typical form). East Barnet, Middlesex; var. cymosum Moq. Finchley, Middlesex.

Urtica dioica L. It does not seem to be recognised generally that the late autumnal growth of the ordinary nettle is often devoid altogether of the usual large leaves, but produces a plentiful crop of small ones like those of var. *microphylla* Hausm. Indeed, if gathered in this late autumnal condition these plants might be taken for *microphylla*, which, however, has only small leaves throughout the year. The same sort of growth is sometimes, though less commonly, met with, in var. *angustifolia* W. & G. late in the season. We possess also a small-leaved form of *U. pilulifera*—without locality, date or collector's name—exactly similar in habit to var. *microphylla* of *dioica*.

NOTES ON ROSA.

By Lt.-Col. Wolley-Dod.

I have recently received a parcel of Roses from Dr Keller, to whom I had sent them for his opinion. His diagnoses of them may entail some alterations in nomenclature which I shall discuss at some future date. I give here his opinion on the only two Roses which have been distributed through the B.E.C. which involve any change in name.

R. rubiginosa × ? from Kidnal, Cheshire, collected by me in July 1906, see *Report* for that year. This is the hybrid I have since described as × *R. tomentelliformis*, from a supposed parentage of *R. tomentella*, var. *Borreri* and *R. rubiginosa*. Dr Keller remarks that the length of the peduncles, the direction of the sepals after flowering, the form of the styles and the lax pubescence seem to indicate that the second parent is not *rubiginosa* but *micrantha*. To judge from the points indicated Keller might be right, but he makes no mention of the acieulate armature below the inflorescence and on other parts of the stems, which to me are almost proof of the *rubiginosa* parentage, since acicles below the inflorescence are rare and on the stems unknown, at least to me, in *micrantha*. Moreover, *R. rubiginosa* is frequently cultivated in gardens, whereas *R. micrantha* is a very rare Cheshire species, and so far as I know, does not exist within several miles of the hybrid. In my opinion, therefore, the putative parentage may remain as *R. tomentella*, var. *Borreri* × *rubiginosa*.

The other is a Rose distributed as *R. micrantha* × *canina* [Ref. No. 2419] by Mr C. E. Britton (see *Report* 1921, pp. 560-1). On this Dr Keller writes, "This seems to me to be a hybrid between *R. rubiginosa* and *R. canina*. Branches beset with acicles are not infrequent in *R. rubiginosa*, but very rare in *R. micrantha*. The sepals of this specimen are partly reflexed, partly spreading or sub-erect after flowering, thus the parent plant with reflexed sepals (*R. canina*) asserts itself, while the other has them more or less erect (i.e. *R. rubiginosa*, not *micrantha*). The subfoliar glands are conspicuous enough for a variety of *R. rubiginosa*. The fertility of the fruits is reduced, hence the hybrid origin is most probable." I see no reason to dispute this diagnosis, and think now that *R. rubiginosa* is a more probable parent than *R. micrantha*, which Dingler thought was concerned.

PHENOLOGICAL OBSERVATIONS MADE AT OXFORD.

By F. A. Bellamy, F.R.A.S.

Phenology includes insect and bird life, as well as observations in the domains of botany.

Essentially it is a record of the earliest observations annually made upon the opening of the petals of wild flowers, when the plant may be said to be "out," in flower, or in bloom. The subject may also include the foliation and defoliation of trees.

Observations of this nature have been made at Oxford since 1855, though my own observations began in 1882 with the list of 79 plants for the Royal Meteorological Society. After some years the Society reduced that list to thirteen trees and plants, as the longer list was considered to be unnecessary or too burdensome to get a full list of observations from the observers scattered over the British Isles.

Since 1882 I have retained most of those 79 plants on my observing list, and I have added more than the same number of wild plants that I considered useful for the purpose, and which were conveniently situated; many of these are water-loving plants and those by the hedgerow and wayside. The absence and distance of any "open" woodland near Oxford prevented me increasing my list of plants in such situations.

With such a long list of about 150 plants to visit and observe for first flowers each year, it is obvious that one who has exacting and daily routine duties to perform will be compelled to miss many plants each year. My reason in increasing the list, and in spreading the observations of the various plants through each month, was in the hope of securing some plants each month from January to August. This I have fairly succeeded in doing, except for the very scarce number of observations in the exceptionally strenuous years from 1897-1906, when I was practically working day and night upon an important piece of International Astronomical work: with that work and the serious illnesses of my two sisters I was prevented getting beyond the limits of Oxford.

Notwithstanding all hindrances to the full annual record for many of those plants, I have secured some thousands of these phenological observations during the past 45 years for Oxford and its immediate surroundings; have recently been tabulating and discussing these observations. The scope of this discussion has been extended considerably, with very interesting results: the investigation is proceeding in my leisure time.

The weather conditions form a strong factor in the acceleration and retardation of the flowering of plants; that is generally known. For Oxford I have reduced the phenomena to facts and figures.

In order that it may readily be seen how the weather of two years may affect the dates of the flowering of plants I append an example of two recent consecutive years of those plants which I observed in both years. I will draw brief attention to them later; but, before doing so, I should first give a few explanatory remarks to the list of 90 plants.

The nomenclature given in the List is antique to most botanists; it is that, in almost every case, which prevailed in the early '80's. These names appear in all my earlier record and note-books; as it would obviously be inconvenient to have a variable name for the same plant in my observations, I have consistently retained the name as used nearly fifty years ago: the advanced botanist can readily read the most up-to-date name in substitution. With the adoption of the new name, I might have to restrict these observations to a particular sub-species or variety of a plant; e.g. the Hawthorn, my observations relate to the first flowers of hedgerow plant which goes down in my List as *C. Oxyacantha*, whether *C. oxyacanthoides* or *C. monogyna* be observed. I believe *C. oxyacanthoides* comes into flower usually several days before *C. monogyna*; I have not made special observations upon this so am not sure.

For the Hawthorn as for the Elm, Whitlow Grass, Lotus, etc., my observations are for the aggregate plant, and I have endeavoured to make my observations as consistent as possible with those limitations; a mere date is often supplemented by a note, these would take up too much space even for the two years 1922 and 1923. Each year the observations are made on the same trees and plants in the same area as far as possible.

The order of the plants in the List is as for the day of the year or month, thus plants 13-27 have their average date of first flowers from April 4 (*Potentilla Fragariastrum*) to April 29 (*Veronica Chamaedrys*), and so on. For the first 60 days of the year (all January and February) I have only six plants observed, two more have been recently added. More plants for the first 75 days of the year would be useful, but I can find none. *Primula vulgaris*, *Senecio vulgaris*, *Lamium purpureum*, *L. album*, *Sherardia arvensis*, *Bursa pastoris*, etc., continue in flower through the autumn and winter if mild. Other early flowering but cultivated plants may occur to one, I consider them useless; such are the Snowdrop, Crocus, Winter Aconite, Hellebore, Almond, etc. I have added *Vinca minor* and *Daphne Laureola* recently, both are accessible near Oxford, and in as wild a situation as they can be found; their average dates are approximately February 14 and February 21; I have also put on my observing List several plants for July and August. As yet I have few observations of these. *Tussilago Farfara* and 60 other plants are on my list, but are excluded here as not having been observed in both years.

Some explanatory and qualifying notes upon some of the plants in the list which follows may be of interest.

Corylus Avellana. the date is for the opening of the fertile flowers, not of the catkins, which usually, though not always come into flower 7 days earlier, and the wild woodland or hedgerow trees are observed.

Ulmus "campestris." The old and large field elms are observed, the young trees are avoided.

Linaria Cymbalaria (alien, but so well established about Oxford) is my most erratic plant. I observed it in flower on January 1 in 1923, while in 1922 the date was May 5. An early date will be observed if there has been an absence of one or two severe frosts before about the middle of February. The plant winters ordinary frosts, 10° is usually too much. In that case the exposed part is destroyed or damaged and new growth has to be waited for, hence an unusually late date results. This happened in the spring of 1922; the late autumn and early winter were so mild or free of strong frosts that an unusually early date was observed in 1923. After then, frost occurred, the plants were destroyed and the next flowers on the new growth were first observed on April 13. I have thought of removing the plant from my list, as also the Oxford Ragwort (*Senecio squalidus*), similarly erratic, also an alien. They behave like some perennial plants, a mild climate allowing them to continue in flower at abnormal times.

No. 17, *Prunus spinosa*, the date for 1922, March 23, appears to be exceptional. It is verified by notes and later observations. Rain preceded the date March 13 in 1923, the date in 1922 was some days later followed by snow which would have affected the more dwarf plants at once.

Nos. 32, 33, 38, and 40 are also aliens, but their inflorescence dates do indicate less exceptional climatic changes. Moreover, they are so well established and are beyond the control or interference of gardeners; and they are all conspicuous and old friends so one does not like to exclude them.

No. 62, *Myosotis palustris*, observed only when growing in the water, or wet, or muddy situations.

Nos. 64 and 87, *Pastinaca sativa* and *Daucus Carota*—these plants are erratic; situation and soil seem to have a marked effect.

No. 71, *Ligustrum vulgare*. Hedgerow plants observed.

To the foliation of some trees I have also given some attention. I append half a dozen pairs of observations for these years. The Elm, showing a green appearance, was 7 days later in 1922 than 1923. This lateness is in the same direction as for the other trees about that date (May 8), but the change in the weather in 1923 after May 1 delayed the full leaf condition until the date was fifteen days later than 1922. This is supported by the observations of the Plane. To me the leafage of the Plane and Elm moves more slowly than with the Chestnut, Lime, and Hawthorn, which appear to be readily accelerated by rain or moisture. The large differences of 15 to 30 days for the Lime, Chestnut, and Hawthorn leafage and the delayed time for full leaf of the Elm and Plane correlate with the more numerous plants in the list given herewith. The weather in April for these two years was of such a difference as caused an average difference, from 14 plants, of 20 days in the dates for first flowers. This divergence is reflected in the observations for those trees which should come into leaf about that month. If one refers to the list of plants given it can readily be seen that a considerable change came over the weather both in May and June in both years. About the middle of May in 1922 the lateness of plants, very marked before, became less late, and before the end of May and through most of June and early July had become some days earlier than the average; while in 1923, the consistent earliness of the flowering of plants continued each month to about the middle of May, became about the average to the first days of June, then the plants were mostly from 7 to 20 days later than the average—a marked difference of weather as affecting plants in these two years.

With these remarks I have now to append the list of the plants observed, together with the deviation in days from the average order of flowering in each month.

LIST OF PLANTS OBSERVED.

No.	Plant's name.	Difference in Days from the Average. 1922.	1923.	Month for Average Flowering.
1.	*Corylus Avellana*	-14	-15	January.
2.	*Ulex europaeus*	+36	-16	February.
3.	*Draba verna*	+30	-34	February.
4.	*Ulmus campestris* [*U. sativa*]	-4	-35	February.
5.	*Taxus baccata*	+17	+1	February.
6.	*Ranunculus Ficaria*	+6	-26	February.
7.	*Mercurialis perennis*	+7	-25	March.
8.	*Anthriscus sylvestris* [*Chaerefolium sylvestre*]	+10	-34	March.
9.	*Salix Caprea*	+2	-1	March.
10.	*Linaria Cymbalaria*	+42	-82	March.
11.	*Caltha palustris*	+16	0	March.
12.	*Anemone nemorosa*	+15	-4	March.
13.	*Potentilla Fragariastrum*	+15	-5	April.
14.	*Nepeta Glechoma* [*hederacea*]	+11	-18	April.
15.	*Primula veris*	+3	-9	April.
16.	*Sisymbrium Alliaria*	+13	-12	April.
17.	*Prunus spinosa*	-13	-23	April.
18.	*Saxifraga tridactylites*	+13	+1	April.
19.	*Erodium cicutarium*	+9	+2	April.
20.	*Scilla nutans* [*S. non-scripta*]	+13	-20	April.
21.	*Ranunculus auricomus*	+8	-15	April.
22.	*Cardamine pratensis*	+23	-5	April.
23.	*Stellaria Holostea*	+17	-15	April.
24.	*Plantago lanceolata*	+14	-8	April.
25.	*Geranium lucidum*	+5	-8	April.
26.	*Ranunculus acris*	+11	-11	April.
27.	*Veronica Chamaedrys*	+12	-7	April.
28.	*Pyrus Malus*	+11	-7	May.
29	*Arum maculatum*	+8	-2	May.
30.	*Lychnis diurna* [*L. dioica*]	+23	-10	May.
31.	*Geranium Robertianum*	+15	-10	May.
32.	*Syringa vulgaris*	+6	-11	May.
33.	*Aeschylus Hippocastanum*	+6	-6	May.
34.	*Viburnum Lantana*	+11	-3	May.
35.	*Ajuga reptans*	+4	-9	May.
36.	*Vicia sepium*	-1	-10	May.

No.	Plant's Name.	Difference in Days from the Average. 1922.	1923.	Month for Average Flowering.
37.	*Barbarea vulgaris* [*B. Barbarea*]	+15	–9	May.
38.	*Lycium barbarum* [*L. chinense*]	+9	–2	May.
39.	*Crataegus Oxyacantha* agg.	+6	–7	May.
40.	*Cytisus Laburnum* [*Laburnum Laburnum*]	+8	–10	May.
41.	*Trifolium pratense*	+10	–5	May.
42.	*Galium Aparine*	+4	+5	May.
43.	*Potentilla Anserina*	+9	+3	May.
44.	*Chrysanthemum Leucanthemum*	+8	–4	May.
45.	*Veronica Beccabunga*	+3	+2	May.
46.	*Sambucus nigra*	0	–3	May.
47.	*Lychnis vespertina* [*L. alba*]	+6	–4	May.
48.	*Lotus corniculatus*	–4	–3	May.
49.	*Lychnis Flos-cuculi*	0	+1	May.
50.	*Viburnum Opulus*	+1	–6	May.
51.	*Hieracium Pilosella*	–1	+5	May.
52.	*Trifolium repens*	–4	–4	May.
53.	*Silene inflata* [*S. angustifolia*]	–2	+6	May.
54.	*Bryonia dioica*	–6	–3	June.
55.	*Nasturtium officinale* [*Radicula Nasturtium*]	–3	–18	June.
56.	*Solanum Dulcamara*	–3	0	June.
57.	*Rosa canina*	–5	–1	June.
58.	*Papaver Rhoeas*	–7	+5	June.
59.	*Orchis maculata* [*O. Fuchsii*]	+1	+7	June.
60.	*Myosotis palustris*	1	+2	June.
61.	*Tamus communis*	–8	+5	June.
62.	*Pastinaca sativa* [*Peucedanum sativum*]	–12	–32	June.
63.	*Lathyrus pratensis*	–2	+7	June.
64.	*Sedum acre*	–4	+12	June.
65.	*Cornus sanguinea*	–4	+7	June.
66.	*Stachys sylvatica*	–2	+6	June.
67.	*Heracleum Sphondylium*	0	+4	June.
68.	*Prunella vulgaris*	–1	+12	June.
69.	*Ligustrum vulgare*	–11	+12	June.
70.	*Convolvulus arvensis*	7	+18	June.
71.	*Astragalus glycyphyllos*	–7	+11	June.
72.	*Centaurea nigra*	–4	+11	June.
73.	*Ballota nigra*	–3	+21	June.
74.	*Scabiosa arvensis*	+2	+9	June.
75.	*Malva sylvestris*	+1	+14	June.
76.	*Galium Mollugo*	–10	+10	June.
77.	*Lapsana communis*	–6	+8	June.
78.	*Vicia Cracca*	+16	–2	June.
79.	*Agrimonia Eupatorium*	+3	+8	June.
80.	*Spiraea Ulmaria*	+4	+7	June.
81.	*Carduus arvensis* [*Cirsium arvense*]	+4	+11	June.
82.	*Achillea Millefolium*	–11	+8	June.
83.	*Galium verum*	–6	+12	June.
84.	*Ononis arvensis*	–9	+10	June.
85.	*Daucus Carota*	–1	+1	July.
86.	*Convolvulus sepium* [*Volvulus sepium*]	–14	+3	July.
87.	*Carduus lanceolatus* [*Cirsium lanceolatum*]	+7	+4	July.
88.	*Epilobium hirsutum*	+8	+4	July.
89.	*Calamintha Clinopodium* [*Clinopodium vulgare*]	0	–3	July.
90.	*Artemisia vulgaris*	+4	–7	July.

FOLIATION.

	1922.	1923.	Difference.
Elm, showing green appearance,	May 7	May 1	–7
Elm, full leaf	May 15	June 9	+15
Chestnut, quarter leaf	May 8	April 22	–26
Hawthorn, half leaf	May 18	April 18	–30
Lime, full leaf	May 25	May 9	–16
Plane, leaf	June 1	June 14	+13

+means 1923 is later, and –means earlier.

My friend, Mr Bellamy, drew up this paper for "The Flora of Oxfordshire," but the exigencies of space prevented its inclusion. Its interest, however, is more than local, and it is inserted here as a very valuable contribution to the subject to which Mr Bellamy has given unwearied pains, and it would be a real loss if it were not published. The editor has merely added as synonyms the names as they appear in " The Plant List."

A VISIT TO THE CANARIES.

By G. Claridge Druce.

In March 1927 I started on a long contemplated visit to the Canaries. The fear of the horrors of the " Bay " had hitherto led to its postponement. However, as in later years one had become in some way a better sea man, and as I wanted to pave the way for a still longer voyage to Buenos Ayres, we took a passage on the Nelson Line. On reaching Tilbury we found a very comfortable vessel in the " Highland Piper," but, as one's luck is, also a gale blowing up, which, when we reached the North Foreland, had intensified to hurricane violence. However, the good boat bore it splendidly, and we were able to sit down to dinner, without fiddles. What a comfort it is to be free from music at meals! Nothing suffered but a bottle of Moet, and even that was not entirely lost. There was great difficulty and real danger (not in any way due to the Moet) in reaching one's cabin, which was on the outer deck. Thanks, however, to a handy-man, it was duly entered. One may say that so high was the wind which was in our teeth—or where teeth should be—that instead of getting to the Canaries in six days, we were more than seven, despite the storm dropping after the second day.

In 1908 J. Pitard and L. Proust published " Les Iles Canaries Flore de L'Archipel," a volume of 502 pages, with some good illustrations of plants growing *in situ*. It begins with the botanical history of the islands and their early explorers, followed with particulars relating to the geography and topography. The group of islands is situated between 29.25° north and 27.38° south latitude, and between 15.40° and 20.30° longitude, the African Coast being within 105 kilometres. In this Archipelago there are 3 groups. (1) the Central, comprehending Teneriffe and Grand Canary; (2) the Western, with Palma, Gomera, and Ferro; and (3) the Eastern, with Fuerteventura, Lobos, Lanzarote, Graciosa, etc. Of these the largest is Teneriffe, 83×51 kilometres, followed by Grand Canary, 50×46; Lanzarote, 59×18; and Palma, 46×22. In superficial area Teneriffe is 1946 kilometres, Fuerteventura 1722, and Grand Canary 1376. They are very sunny islands, with a small rainfall. Teneriffe has, on an average, only 66 days on which rain falls. They are volcanic in origin and the soils are chiefly acid, but there is porphyry and basalt, which give a basic element. About 1350 species of plants have been recorded as native or "spontaneous." Of these 350 are ubiquitous, 534 belong to Mediterranean types, and the very large number of 468 are endemic in the Atlantic group. They are made up of 1098 Dicotyledons, 205 Monocotyledons, 6 Conifers, and 43 Vascular Cryptogams. The largest family is Compositae with 176 species, followed by Leguminosae 128, Gramineae 93, Labiatae 83, Crassulaceae 66 (Tunis with 1947 species has only 15 of these). The predominant species in the Canaries belong to the Labiatae, Crassulaceae, Euphorbiaceae, and Solanaceae; in Marocco the order is Caryophyllaceae, Scrophulariaceae, Ranunculaceae, Rubiaceae, and in Tunis Leguminosae, Graminaceae, Cruciferae, and Umbelliferae. Endemism diminishes eastwards. Tunis, with 1947 species, has 28 endemic species, while Algeria, with 3800 species, has only one.

The authors detail the characteristic plants of the various zones.

1. Maritime. In this area Mosses and Hepatics are rare, but Lichens are very common. A considerable extent of the area is dry, rocky, hilly ground with no verdure. At the base of the cliffs among debris grow many interesting species, such as *Retama*, *Ferula Linkii*, etc. What in Devon would be wooded coombs are here dry Barrancas with steep, in some instances precipitous, sides, and in these grow many very interesting plants, each Barranca seeming to produce something different from the other.

The dry sand-dunes appear very barren, but there among other plants grow rare Frankenias and *Tamarix canariensis*.

What the authors call "Prairies" are of limited extent, but at 700-900 feet about Areucas they are quite flowery with plants of the Mediterranean region predominant. As "satellites" of culture again come with this Mediterranean element—*Delphinium Ajacis*, *Glaucium corniculatum*, *Scandix*, *Centaurea melitensis*, etc., and, as still more linked up with man and his operations, the Chenepods, *Urtica membranacea* and *Stachyoides*, *Marrubium*, *Verbena*, *Hyoscyamus* and *Datura*, while the house-tops and walls are often brilliant with species of *Aichryson* and *Aeonium*, the varieties of which are as puzzling as those of our *Hieracium* and *Taraxacum*.

ii. The Sylvestral Zone is situate high up the Grand Canary. The Laurel Forest at Monte Doramas is 2200 ft. up, at San Mateo 4000 ft., and the Pine Woods about 3300 ft. These are rather difficult to reach, but are very attractive, for here grow species of *Cistus*, *Genista*, *Globularia* and *Adenocarpus*. In Teneriffe the beautiful laurel woods of Las Mercedes are situate at about 2800 ft. There in the woodlands are very many endemic species, and three out of the seven species of orchids.

iii. The Subalpine Zone, from 6000 ft. up.

The Types of Vegetation—Mediterraneo-Canariens. Under this is

(1) Marocco-Canariens with 16 species, including *Salix canariensis*, *Cytisus albidus* and *Retama microcarpa*. 16 other species are also found in Madeira, Cape Verd, and Portugal.

(2) Saharo-Canariens with 20 species, which include *Tricholaena teneriffae*, *Salvia aegyptiaca* and *Lotus arabicus*.

(3) Ibérico-Canariens, which are poorly represented, include *Prunus lusitanica* and *Davallia*.

The most interesting of all are, of course, the Endemic species, numbering 335 with 30 varieties, which are limited to these islands, Madeira, The Azores, and Cape Verd. There are 134 species belonging to 41 endemic genera. To this rich and interesting flora the authors added very many species. Our old member, the Rev. R. P. Murray, who wintered there for several seasons, made rich collections which are now in the Natural History Museum at Cromwell Road. He contemplated, but never produced, a Flora of the Islands. The number of species in the restricted Canaries is 1352, of which 350 are Ubiquitous, 534 Mediterranean, and 168 Endemic.

The first appearance of Las Palmas as one comes into the harbour at night is very cheerful, as there is a long coast line illuminated with many electric lights in a curving line of beauty. The Metropole is a pleasant place to stay in—good rooms, clean, excellent food, a nice garden and lounge overlooking the sea, as well as a large indoor lounge. The music was good. The vegetation just outside was sadly disappointing, as the adjacent sand-dunes were dirty and bare. Few plants of interest greeted us on our first walk and drive, and such as showed themselves were mostly adventives and ruderals, such as *Chenopodium murale*. On the more lofty eminences two or three species of *Euphorbia* grew, some dismal Caryophyllaceae and the weird *Mesembryanthemum nodiflorum*. The hotel is about midway between the Port and Las Palmas, the latter a pleasant town with public gardens and a fine cathedral, from the tower of which a grand view is obtained of the coast line and the narrow strip of very rich land between the sea and the cliffs. Here grow millions of bananas, a culture introduced or encouraged by Sir Alfred Jones, and now a most remunerative industry. The island seems every prosperous, the people are well dressed, and there are no beggars. Constant fleets of " wahwahs " and trams was always full of travellers as they plied from port to town—about 4 kilometres. As there was no temptation in the way of plants on the route one always chose one or the other of these vehicles. From the town we explored one of the great Barrancas which lead inland. It had very steep cliffs and a sheltered tract of cultivated ground in the middle, where the banana flourished as well as the mesquit, orange, lemon, vine, almond, peach, apricot, pear, quince, locust, olive, fig, date palm, sugar cane, and vegetables galore. The prickly pear, *Opuntia Ficus-indica*, introduced as a food for the cochineal insect, had run rampant on the cliffs, and there was also *O. Tuna*, which had been brought in for the sake of its spines, which are used to fasten clothes over the other one in order to protect the cochineal insect from the sun. In their upper parts the Barrancas still afford some of the indigenous vegetation, such as *Salvia canariensis*, with elegant foliage, often silvery white underneath, and conspicuous flowers or perhaps more bracts than flowers of pinkish purple, an unrecorded variety of *Fumaria muralis* (*Lowei* Pugsl.), *Portulaca*, a dwarfed form of *Helianthemum canariense*, *Polycarpon*, *Rhamnus crenulata*, *Retama Rhodorrhizoides*, *Ononis reclinata*, *Melilotus indica*, *Psoralea bituminosa* var. *palestina*, *Carduus clavulatus* (one of the many endemics), *Galactites*, *Centaurea melitensis*, *Helminthia Echioides*, *Zollikoferia spinosa* (abundant), *Verbena supina* and *Euphorbia balsamifera*. On the dry hilly ground *Plocamia pendula*, a bushy plant, as unlike any of our Rubiaceae as it is possible to conceive, grew in great quantity. It was only excelled in numbers indeed by the masses of *Euphorbia balsamifera* and *Zollikoferia*, the latter occasionally infected with the parasitic *Cuscuta*. Orchids are few and rare, but the *Agave* is very common and makes a conspicuous feature in the vegetation, and here and there are the bright flowering spikes of *Aloe vera*, both too succulent for collecting. Here I obtained a solitary plant of *Carex vulpina*, which we afterwards found in better condition at San Felipe. It is a plant which for the Canaries only rested upon Despreaux's unlocalised record. *Picris Echioides* grew in the Barranca as did *Campanula Erinus*. The Banana groves and the well-tilled arable soil about Las Palmas yield a few species including *Bromus Unioloides* (new to the island), *Chenopodium murale*, *Glaucium corniculatum*, *Sisymbrium Irio*, *Brassica incana*, *Portulaca oleracea*, *Melilotus indica*, *Asteriscus aquaticus*, *Bidens pilosa* var. *discoidea* Pitard, *Calendula arvensis*, *Sonchus oleraceus* var. *ciliatus* (Lam.), which I believe is a good species, *Urospermum Picroides*, *Anagallis foemina*, and *Borago officinalis*.

In company with two of our members, the Misses MacDougall, we made a very interesting excursion by motor along the coast to Telde, under a fine range of cliffs which have some most interesting plants, including an endemic and handsome Umbellifer and a fairy-like *Limonium*—*pectinatum*, with foamy bluish-pink flowers. Telde, four hundred feet up, is a charming place situate in an area in which Tomato vegetation is dominant and the almond trees are very fine. There we saw the magnificent and cactus-looking *Euphorbia canariensis*. The striking *Salvia canariensis*, both as the type and the variety *villosa* Pitard, which has both sides of the leaves coloured white, was in plenty. Here, too, was the almost tree-like *Rumex Lunaria*, *R. vesicarius*, *Andropogon hirtus* and many others occurred. The well engineered road is constructed along the coast in bold sweeps, affording delightful views, often of a half-eastern kind, the white flat-roofed houses and the palms lending their help in producing the effect. The white garden walls, over which hang the Ivy-leaved and other Geraniums, that most beautiful climber *Bignonia venusta*, and the trumpet shaped, rich purple-blue blossoms of *Thunbergia* make a brilliant display. The oranges of Telde are amongst the best in the world. I took 12 dessertspoonfuls of juice out of a single orange. Our destination was San Bartolemeo, and to reach it the road took us over a pleasing country with much and peculiar vegetation. Here grew *Phagnalon purpurascens*, *Tamarix gallica* var. *canariensis*, *Hedypnois cretica*, *Echium Decaisnei* (altitude 3900 ft.) and *Filago gallica*. At San Bartolemeo a short walk took us up a ravine where, on a precipitous wall of rock, grew the Canary *Sonchus*. Here also occurred *Cerastium viscosum* as a robust roundish-leaved plant, *Lavandula multifida* and *Veronica Anagallis* (a second locality). Right ahead on the mountain slope grew *Pinus canariensis*, while close by were *Poterium verrucosum* (a new plant for the Canaries), *Phagnalon purpurascens*, *Inula viscosa*, *Senecio Webbii*, *Rumex vesicarius*, *Scirpus Holoschoenus* var. *romanus* (L.) (new to the island), that lovely grass, *Lamarkia aurea*, *Adiantum Capillus-Veneris* and *Carduus pycnocephalus*. On the high rocks above grew *Juniperus Cedrus*, now nearly extirpated.

About Santa Lucia, a pretty village at about 2200 ft. altitude, situate amid trees and with pleasant walks, grow *Fumaria parviflora*, *Reseda scoparia*, *Malva nicaeensis*, *Oxalis corniculata*, *Asteriscus aquaticus*, *A. stenophyllus*, *Absinthium canariense*, *Rhagadiolus stellatus*, *Anchusa italica*, *Echium onosmifolium*, *Convolvulus Siculus*, *Linaria scoparia* and *Andropogon hirtus*.

From Las Palmas a pleasant drive takes one up to Monte (1300 ft.) by Tafira (1000 ft.) where there are large Eucalyptus trees, and Santa Brigida, a good wine producing area. At the latter place there is an hotel under the same proprietorship as the Metropole, which has a wonderful garden and pergolas bright with many coloured creepers.

From Monte one can visit the Great Caldera, the crater of an immense volcano, by a path amid scarlet Geraniums where *Cuscuta* was growing over *Psoralea* and *Pelargonium*, and where the Prickly Pear abounds. Here we found *Sagina apetala* for which no locality is cited in the Flora. On the border of cultivated fields we found *Dracunculus canariense*, a thin edition of *Dracunculus Dracunculus* (L.), *Arisarum Arisarum* (L.), and in the fields *Hyacinthus comosus*, *Gladiolus*, *Malva nicaeensis*, *Vicia benghalensis* in glorious colour, *Bidens pilosa*, *Ammi majus*, *Ranunculus muricatus*, *Lathyrus Aphaca*, often very pale yellow, *Bryonia verrucosa* All., not unlike the British plant, *Chrysanthemum Myconis* of the same glorious yellow as *segetum*, but with foliage less cut and of a firmer texture, *Schizogyne sericea*, *Polycarpon tetraphyllum*, *Tunica prolifera*, *Scorpiurus sulcatus*, *Stipa tortilis*, and a new variety of *Hordeum marinum*. *Zannichellia palustris* occurred in a small tank. Near Monte *Eschscholzia Douglasii* and *Erigeron mucronatum* (both new adventives to the flora) have established themselves and a rocky eminence above Santa Brigida, which commanded a very beautiful and extensive view, gave *Cervicina Lobelioides* (L.).

San Mateo (2670 ft.) with its groves of blossoming Walnuts and Pines has a rich flora, including *Persea indica*, *Parietaria debilis*, *Ophrys bombyliflora*, *Epilobium parviflorum*, which does not seen to have been recorded for this island, *Antirrhinum majus*, *Notochlaena Maranta*, *Aspidium canariense*, *Davallia* and *Selaginella denticulata*. On the house-roofs here there was plenty of a charming *Sedum*, and on a steep hillside was the splendid *Sonchus congestus* with flowers like, but larger than, *arvensis*, the phyllaries sunk in white cotton wool. At and about Tafira there were most interesting plants. In a ravine we got the special Canary Bell-flower, a tall climbing shrub with drooping bells recalling a *Datura*. It is the endemic *Canarina Campanula* (L.) Druce, locally called Bicacarro. Here, too, was *Orobanche Schultzii*. High up above the curving sweeps the road led from San Mateo to Lagunetta. On the way a ravine showed us for the first time the glorious *Ranunculus cortusifolius* with flowers 2 inches across of the most glossy gold and with very handsome foliage. A damp hill slope was covered with them. Some of the plants were a yard high. At the base of the gorge was a *Myosotis*—like *sylvatica*, and a somewhat perilous descent secured specimens proving it to be *M. macrocalycina*. Some of the roadside banks were gay with spring flowers (they were over blossom at the coast-line) and they reminded me of a headland in Jersey. *Tillaea*, *Agrostis caryophyllea*, *Helianthemum guttatum* and *Trifolium stellatum* were represented, and there was a pretty form of *Cynosurus echinatus* with reddish hairs—*purpurascens* Ten. Much *Echium* occurred and here and there grew colonies of *Iris florentina*—an introduced plant. There were masses of *Hyacinthus comosus* in some of the fields, and the roadsides were bordered with a white-flowered leguminous shrub—*Cytisus proliferus*. *Festuca Myurus* was luxuriant. Here, too, grew that pretty *Fumaria coccinea* Lowe and *F. muralis*, a *Mathiola*, very like *incana*, with narrower and with less hoary leaves, *Tunica prolifera* and *Veronica Anagallis* agg. The endemic Cineraria, *Kleinia Kleinia* (L.), was in plentiful flower, but only with white, dull pink or red flowers, never with blue. *Filago spathulata*, *F. gallica*, *Preauxia jacobaeifolia*, *Asperula arvensis*, *Trifolium striatum*, *Lathyrus Ochrus* and *Cardamine hirsuta* (4200 ft.) were obtained, and we also here got an addition to the Island flora, *Chaerefolium Anthriscus*.

Teror also gave us some good plants. *Briza maxima* var. *maderensis*, *Lamarkia aurea*, *Iris florentina*, *Poa bulbosa* in its only published locality, *Koeleria Phleoides*, *Setaria glauca*, *Fumaria muralis* var. *Lowei* and var. *laeta* Pugsl., *Silene Cucubalus* var. *rubra* (DC.), *Artemisia canariense*, *Senecio Teneriffae*, *Tillaea muscosa*, *Psoralea bituminosa*, *Vicia benghalensis*, *Lathyrus Aphaca*, *Trifolium arvense* var., *T. angustifolium*, *Vinca major* and *Rumex bucephalophorus* made a nice gathering.

There was a great delight in these expeditions from Lagunetta as, at an altitude of over 4400 ft., the air was clear, cool, and invigorating, and the views extensive and charming. From this place the Cross of Tejeda (5740 ft.) can be reached in about two hours. The isolated Roque Nublo (6110 ft.) rises abruptly above. The view is magnificent as from here in favourable weather the Peak of Teneriffe is itself the dominating feature rising as it seems to do abruptly from the blue sea.

San Felipe was another expedition of great interest. It takes quite a long day as one passes many interesting places. Our first stop was near Areucas with its modern but fine cathedral—a populous city of about 13,000 people. It is a town of industrial importance. Around it is a great area devoted to the cultivation of the Cochineal industry—an industry which was nearly starved out by the competition of aniline colours but it has now, through the fashionable cult of the lip-stick, once more come into its own since the carmine yielded by the *Coccus Cacti* has a purity and brightness of colour which carries the day.

Around Areucas are many interesting plants. There we found *Ononis mitissima*, *Stachys hirta*, *Phalaris caerulescens*, *Ammi majus*, *Webbia canariensis*, *Salvia Horminoides*, *Polygonum heterophyllum* Lindm., *Emex spinosus*, *Rumex pulcher*, *Agrostis verticillata*, *Bromus madritensis*, etc. We stopped at Agaete for lunch which we enjoyed on the shores of a tiny harbour and then proceeded to Guia where there were many most interesting species, including *Centaurea melitensis*. The road led close by the sea or with only a strip of land separating us from it and the overhanging cliffs, which gave a home for many rarities. Here we saw the endemic monotypic genus, *Astydamia canariensis*, an Umbellifer with Crithmum-like leaves which proved a most refractory plant to dry. Its loose umbels recall *Laser*. At San Andraea we got *Juncus acutus* and a fine *Echium*. On barish soil there was much *Ononis Natrix* with deep orange-coloured blossoms, *Foeniculum piperitum*, *Chrysanthemum frutescens*, *Hyoscyamus albus*, *Micromeria thymoidea*, the endemic *Bosia Yervamora*, which has an analogue in Cyprus, *Euphorbia aphylla*, *E. terracina*, *Salix canariensis*, *Asphodelus fistulosus* and *Piptatherum caerulescens*.

The Barranca of San Felipe is very picturesque. The steep side of the well wooded ravine gave us much to collect. A white-blossomed cylindric shrub about 10 ft. high was growing deep down, but my adventurous helper got a branch and it proved to be *Rhodorhiza florida*—a member of a Convolvulaceous genus. At a distance it recalled white blossomed *Nerium*. The Sonchi here are most interesting. We got the two endemic treasures—*S. canariae* Pitard and *S. neglectus*, the former looking as if the glossy leaves had been varnished. Here we added a plant to the flora of the Islands—*Juncus subnodulosus*. *Apium nodiflorum*, which is rare, and *Carex vulpina*, which has no localised habitat in Gran Canary, were also seen. Among other species were *Ferula Linkii*, *Phagnalon saxatile* var. *intermedium*, *F. purpurascens*, *Odontospermum spinosum*, *Convolvulus siculus*, *Orobanche ramosa*, *Salvia canariensis*, *Stachys hirta*, *Micromeria Linkii*, *Asparagus umbellatus*, *Allium trifoliatum*, *Scilla haemorrhoidalis*, *Polypogon monspeliense*, *Briza maxima* var. *maderensis*, *Helianthemum guttatum* and *Silene gallica*.

From Las Palmas we sailed to Santa Cruz in Teneriffe having a delightful journey in a clean boat. It is a busy port and the export of bananas, onions and potatoes is very considerable. We had several pleasant walks in the environs, but the plants we gathered were not numerous, and many were adventive. The pleasantly situated town of Laguna is within easy reach by trams and here the vegetation is richer. The Cathedral offers many points of interest, and a visit was paid to the great Dragon Tree, *Dracaena Draco*, probably the largest existing example in the island. It has often been described. Then we motored to Orotava by way of Tacaronte, a delightful drive which afforded us the opportunity of gathering near Laguna, *Sonchus congestus* and *Senecio Tussilaginis* with white and purplish flowers. Near Tacaronte we found the glorious *Lathyrus tingitanus* and *Daphne Gnidium*.

We stayed at the Hotel Victoria in the Villa Orotava on account of its marvellous garden which once belonged to the Marquesa de la Quinta Rosa. It is laid out in terraces where the Teneriffean *Lotus peliorhynus* (which seems to have become extinct in the wild state) and the giant *Echium* are in most splendid show. Near the top of these terraces is a white marble monument to the memory of one of the family. He was a freemason—its emblems, the square and the compass, are carved on the sides of the monument, and, as such, are like anathema to the religious powers; therefore he was not allowed to be buried in consecrated ground, but never could ground be more consecrated than this with flowers where he now rests. The air was heavy with perfume from lilies, heliotrope, lavender, rosemary, myrtle, roses, violets, and there are shrubs and trees of Acacia, orange, lemon, *Erythraea*, *Wistaria*, *Bignonia*, etc. It was a glorious place and did much to compensate for the commissariat. Among the plants we got at Orotava were *Sagina apetala*, *Oxalis corniculata*, *Melilotus indica*, *Caucalis infesta*, *Lactuca Serriola*, *Nicotiana Tabacum*, *Calceolaria Chelidonioides*, *Salvia Horminoides*, *Parietaria debilis*, *Carex divulsa*, *Cynosurus echinatus* var. *purpurascens* Ten., *Urtica morifolia* and *Ricinus communis*.

Owing to the cloudy weather, for we had come from the sun to the shade, an expedition to the Peak was out of the question. Indeed one day there was snow to within about 1800 feet of the sea and the lower hills were snow-sprinkled, so we confined our attention to the Barrancas where many interesting and endemic plants were gathered.

A special expedition was made to the Mercedes Forest and its waterfall, now, alas, tapped for electric light. In the woodlands, at about 2500 ft., we greeted the striking, but rather sombre-coloured, *Geranium anemonifolia* and here we saw the curious tree, *Gesnoninia arborea*, *Myrica Faya*, *Hypericum glandulosum*, *Adiantum reniformis*, *Woodwardia*, *Erica arborea*, *Cedronella canariensis*, *Urtica morifolia*, *Androsaemum Webbiana*, *Ilex platyphylla*, *Viburnum rugosum*, *Persea indica*, *Laurus canariensis*, *Semele androgyna*, *Peristylus cordatus*, *Selaginella* and *Anagramma leptophylla* made a goodly gathering.

A large number of plants have still to be determined. The following are, where starred, new to Pitard's Flora, or were found in new localities. The sign † signifies adventive.

**Eschscholzia Douglasii* Walpers. Above Monte, Canary, spreading there
**Fumaria coccinea* Lowe, ex Pugsl. Lagunetta, Canary, a pretty species.

F. muralis Sond., var. *Lowei* Pugsl. Tafira, Teror, Canary; *Orotava, Teneriffe.

*Var. *laeta* Pugsl. San Mateo, Lagunetta, Canary.

**F. parviflora* Lam. Orotava, Teneriffe.

(The Fumarias have been named by Mr Pugsley.)

Rapistrum rugosum All. Las Palmas, Canary.

**Cardamine hirsuta* L. At 4000 ft. Lagunetta, Canary.

**Bursa Druceana* (E. At.). Laguna, Teneriffe.

**B. turoniensis* (E. At.). Lagunetta, San Bartolemeo, Canary.

Silene angustifolia S. & T., *var. *rubra* (DC.) Dr. Teror, Canary.

**Stellaria media* Cyr. Tafira, San Bartolemeo, Canary.

**Cerastium viscosum* L. Tafira, San Bartolemeo, Canary.

Sagina procumbens L. San Mateo, Canary; *Orotava, Teneriffe.

Spergula vulgaris Boenn. *Santa Brigida, Teror, etc., Canary.

Malva nicaeensis All. San Lucia, Santa Brigida, Canary (unlocalised).

Oxalis corniculata L. *San Lucia, Tafira, Canary.

Medicago arabica Huds. Tafira, Canary, a rare plant in the islands.

Melilotus indica All. Guia, Canary.

Trifolium angustifolium L. Teror, Canary.

Vicia benghalensis L. Lagunetta, Canary, only one locality given in the Flora.

**Lathyrus Ochrus* L. Lagunetta, Canary.

**L. tingitanus* L. Near Tacaronte, Teneriffe.

**Poterium verrucosum* Spach. San Bartolemeo, Canary.

Aichryson dichotomum DC. San Felipe, Canary.

A. punctatum W. & B., var. *subvillosum* Born. Tafira, Canary.

Aeonium caespitosum W. & B. Lagunetta, Canary.

**A. canariense* W. & B. Monte, Canary.

Greenowia aurea W. & B. San Felipe, Canary, one solitary locality given in the Flora.

(The Crassulaceae have been determined by Mr Praeger.)

Lythrum Hyssopifolia L. Tafira, Canary, no locality given in the Flora.

**Epilobium parviflorum* Schreb. San Mateo, Canary.

Callitriche stagnalis Scop. Tafira, Canary, a rare species in the islands.

**Chaerophyllum Anthriscus* (L.) Thell. In some quantity in the streets and about the village of Lagunetta, Canary, at about 4000 ft. New to the group.

Sherardia arvensis L. Teror, Canary.

**Erigeron mucronatus* DC. About Monte, Canary, now naturalised.

**E. bonariensis* L. (or near it). Areucas, Canary.

Sonchus oleraceus L., var. *ciliatus* (Lam.). Las Palmas, Canary; Santa Cruz, Teneriffe.

S. asper Mill., var. *pungens* Bisch. Guinguada, Lagunetta, Canary.

Cervicina Lobelioides (DC.) Dr. Monte, Canary.

Myosotis versicolor Pers. Tafira, Canary.

Cuscuta epithymum DC. On *Pelargonium* and *Galium* at Monte, Canary.

Heliotropium erosum Lehm. Guia, Canary.

Datura Metel L. Las Palmas, Canary; Laguna, Teneriffe.

**Antirrhinum maius* L. San Mateo, Canary, probably introduced.
**Linaria Cymbalaria* Mill. Santa Brigida, Canary, perhaps introduced.
Veronica arvensis L. Large specimen at Monte, Tafira, Canary.
V. Anagallis agg. Very glandular, San Bartolemeo, Canary.
Orobanche nana Noé. San Felipe, Canary.
O. Schultzii Mutel. San Mateo, Canary.
Stachys arvensis L. San Mateo, Canary.
S. hirta L. San Felipe, San Mateo, Canary.
**Chenopodium album* L. Las Palmas, Canary.
**Chenopodium Pseudo-Borbasii* Murr. Las Palmas.
**C. lanceolatiforme* Murr, var. *farinosa* Murr. Las Palmas.
**Polygonum heterophyllum* Lindm. Arencas, Canary.
Rumex pulcher L. Arencas, Canary, no locality given in the Flora.
R. Lunaria L. San Felipe, Canary.
Scilla hoemorrhoidalis W. & B. San Felipe, Canary.
**Juncus subnodulosus* Schrank. Near San Felipe, Canary, robust specimens.
J. acutus L. San Andraea, Canary.
Zannichellia palustris L. Monte, Canary.
Scirpus Holoschoenus L., var. *romanus* L. San Bartolemeo, Canary.
Carex vulpina L. San Felipe, Canary, unlocalised in Flora.
C. divulsa Stokes. Guinguada, Canary.
Stipa tortilis Desf. Santa Brigida, Canary.

VERONICA ANAGALLIS L. AND V. AQUATICA BERNH.

By C. E. BRITTON.

The distinctions between these two species were first pointed out to British botanists by Dr Druce in *Rep. B.E.C.* 26-27, 1911, where the chief points of differences were contrasted. Of the many more amplified descriptions available, none appear to be so excellent as the accounts of these two forms given by Buchenau, which are as follows:

VERONICA ANAGALLIS L.

10 to 50 (rarely 100) cm. *Usually glabrous, seldom glandular.* Stem ascending or erect, simple or branched, slightly quadrangular. Leaves broadly ovate to ovate-lanceolate, usually acute, almost entire or with distant small serrations, *the lowest and those of the lateral branches shortly petioled*, upper sessile. Inflorescence many-flowered. *Corolla medium, bluish-lilac. Infructescence compact* (pedicels slender, spreading at an acute angle, towards the extremity usually curved upwards). Capsule ovoid-orbicular to orbicular, acutely emarginate, *equalling the narrowly oblong sepals.*

V. aquatica Bernh.

10 to 50 (seldom 100) cm. *Mostly glandular, seldom glabrous*, solitary, with woolly hairs at base (var. *dasypoda* Uechtritz). Stem as in preceding. Leaves all sessile, oblong-ovate to lanceolate, acute, entire or finely serrate. *Infructescence finally very lax* (pedicels stouter, straight, or towards the extremity somewhat ascending, almost divaricate). Capsule orbicular-elliptical, *usually exceeding the ovoid-oblong sepals. Corolla small, pale reddish.*

Buchenau, Fl. N.W.-Deutsch. Tiefeb. Krit. Nachtr., 57, 1904.

In the close study of these two species published by Ernst Kroesche in *Allgem. Bot. Zeitschr.*, 1912, that author distinguished three sub-species of *V. Anagallis* and a number of "formen" belonging to this and to *V. aquatica*. It is evident that these "formen" are of very unequal value, comprising mere states, well-marked varieties, a possible hybrid, and one plant that should stand as an allied but independent species. Forma and variety appear to be used as interchangeable terms.

A summary of the sub-species and "formen" is here given.

V. Anagallis L.

Sub-sp. I., genuina Kroesche.

Mature capsules borne on pedicels directed obliquely upwards and sharply curved; fruiting raceme compact, capsule obtuse. The typical form is said to be distinguished by the leaves of the middle part of stem being elliptical-obovate or ovate, obtuse or shortly acute; capsule emarginate, ovoid-orbicular, usually 3-3.5 mm. broad and long, as long or shorter than the sepals, corolla (when pressed flat) 5.5-7 mm. in diameter. Inflorescence glabrous, sepals acute or sub-acute. The colour of corolla ranges through pale lilac, blue, pink, to white. The names of f. *procerifolia* and f. *angustifolia* denote more slender plants.

Forma *longicarpa* differs from the two preceding by the elliptical capsule, not or scarcely emarginate, 3 × 4 mm., often longer than the sepals.

Forma *grandiflora* is also a slender plant, with the corolla 7-9 mm. in diameter. The stem leaves and the sepals are also more drawn-out than in the foregoing.

Forma *undulata* (Wallr.). Leaf-margin undulated, serrate.

Forma *ulvacea* Hausm. Submerged; leaves large, compact, yellowish-green, stems numerous, weak, floating; seldom flowering.

Forma *anagallidiformis* Bor. Inflorescence more or less glandular.

Forma *elata*. Whole plant hairy above.

Sub-sp. II., divaricata Kroesche.

Mature capsules borne on pedicels more or less widely spreading, oblique or divaricate, not, or scarcely, curved; infructescence more or less lax. Capsule often sub-acute. Leaves at middle of stem oblong or linear-lanceolate, acute or cuneate-acute.

Forma *typica* has the calyx-segments lanceolate, 1-1.5 mm. broad, acute; the corolla, when pressed flat, 5.5-7 mm. in diameter, pinkish, with deeper coloured veins; the capsule 3-4 mm. in length and breadth, broadly ovoid or orbicular, sub-acute, not, or only slightly, emarginate. Plant generally robust.

Forma *contigua* differs in the shorter and broader rhomboid-lanceolate sepals. As another form under this sub-species, is placed *V. anagalloides* Gussone, but surely incorrectly, as this appears to be quite a good species.

Sub-sp. III., AMBIGUA Kroesche.

Here the pedicels of the ripened capsules are more or less oblique, scarcely, or only slightly, curved, and fruiting raceme somewhat lax. Middle stem-leaves elliptical to oblong-lanceolate, acute. Capsule obtuse or sub-acute.

This includes two forms—(1) *decipiens*, with capsule about 3-3.5 mm. in length and breadth, ovoid-orbicular, sub-acute, never more than slightly emarginate. Calyx segments usually rhomboid lanceolate, acute. Corolla pale pink, with deeper-coloured veins. Pedicels and base of calyx glandular. (2) *parvicapsulata* has the 2-3 mm. orbicular capsule not emarginate, and the corolla is pale blue with darker veins. The inflorescence is either glabrous or with scattered glandular hairs on the upper pedicels.

V. AQUATICA Bernh.

The forma *typica* is marked by the orbicular-elliptical capsule and whitish, reddish, or lilac corolla. Included with this are var. *dasypoda* Uechtritz with numerous crisp hairs at base of stem; var. *glandulifera* Celak., with inflorescence more or less glandular; and var. *laevipes* Beck, wholly glabrous. In forma *laticarpa*, the capsule is about 3-4 mm. broad and 3-3.5 mm. long, broadly ovoid, usually as long as the sepals. Corolla (when flattened) 5-6 mm. in diameter, pinkish, with darker veins, at times, however, also bluish.

As subordinate forms are placed *sterilis*, with very small capsules and aborted seeds; *acuminata*, with long-drawn-out sepals, and *pilosa*, with spreading hairs on the lower part of stem.

Most British forms of Water Speedwell must be placed to *V. Anagallis*, I think. *V. aquatica* appears to be less common. The great bulk of the first-named would, by reason of the ascending little-curved pedicels, be included in the sub-sp. *ambigua*. Less common are the plants with more or less widely spreading pedicels, which are to be placed with sub-sp. *divaricata*. These are liable to be mistaken for *V. aquatica*, but the slender pedicels and smaller bracts, etc., should prevent this. Well-marked examples of sub-sp. *genuina* appear to be seldom met with.

V. aquatica Bernh., var. *laticarpa* appears to be a well-marked form.

In the determination of all forms, it is of the first importance that the specimens should be well-grown and bearing fully mature capsules preferably with some of these dehisced, as certain characters are based upon the capsules in this condition.

BOTANISING IN MAJORCA.

By C. D. Chase, M.C., M.A.

So many English tourists now visit Majorca every spring that a short account of the botany of the island may be of interest. For a serious study of the vegetation of the Balearic Islands the monumental work, in three volumes, of Professor Herman Knoche is indispensable. The following notes of a fortnight's visit to Majorca in April 1928 with a Leplay House party owe much to that work. Though some plants have ceased to flower in April and many others are not yet out, that month is probably best for a botanist's visit to Majorca.

The island is some 60 miles long by 50 broad, with a range of mountains which attain nearly 5000 feet running along its north-west side. The rest is a fruitful plain devoted to the culture of almonds, oranges, figs, carob beans, vines, corn and broad beans. The olive also flourishes, especially on the lower slopes of the Sierra. Not without reason has the island been called the orchard of the Mediterranean. The climate is delightful, and though the mountains are often covered with snow in the winter yet fires are scarcely needed for warmth in Palma and the other towns of the plain. Indeed there was no provision for heating in the many excellent up-to-date schools which we visited.

So fertile is the soil that the garigue or waste scrub-land is not extensive, being found chiefly at the south west corner and in strips around the coast. The flora of this garigue approximates very closely to that of the south of France. The following were seen in our first walk to Porto Pi and Cas Catala to the west of Palma:- *Pistacia Lentiscus*, *Cistus monspeliensis*, *C. albidus*, *Rosemary*, *Olea silvestris*, *Lavandula dentata* (this Spanish and North African species replaces *L. Stoechas* which is so common in the south of France that a village, Lavandou, has been named after it); *Smilax aspera*, *Daphne Gnidium* (not in flower in April), *Ruta chalepensis*, *Globularia Alypum*, *Rubia peregrina*, *Gladiolus Illyricus* (much like *G. segetum*); *Helianthemum laevipes*, *Phillyrea angustifolia*, *Helichrysum Stoechas*, *Asparagus albus*, *A. stipularis* (these two are not in France; the latter when old loses its leaves and is a mass of thorns); *Ophrys speculum* (the commonest member of Orchidaceae); *Orchis coriophora*, *Cneorum tricoccum*, *Osiris alba*, and the grasses, *Andropogon hirtum*, *Lagurus ovatus* and *Stipa juncea*.

On April 12 several hours were spent on the sandy shore which runs from Arenal to the eastern outskirts of Palma. A strip of garigue between the shore and the cultivated land yielded most of the plants enumerated above, with the addition of *Juniperus phoenicea* and *Anthyllis Cytisoides*. The vegetation of the shore itself consisted of *Lotus creticus* in great abundance, with *Medicago marina*, *M. littoralis*, *Passerina velutina* (endemic in the Balearics and closely resembling *P. Tartonreira*); *Crepis bulbosa*, *Anthemis maritima*, *Cakile maritima* and Sea Holly. The shore was covered with masses of egg-shaped bundles of fibre: these come from the roots of *Posidonia oceanica*, their shape being due to the action of the waves.

Most of the next day was spent in a car on a visit to Arta and the wonderful stalactite caves, perhaps the finest in Europe. A few interesting plants were seen during a halt made near Arta. The hillsides around that place are covered with *Chamaerops humilis*, the only native European palm. From the fibre of its leaves baskets and other articles are made in the villages. Half an hour spent in some fields of beans and bearded wheat produced a large number of weeds of cultivation to add to my list. Many of these, poppies, fumitories, etc., were old British friends; the rest were chiefly such as would be met with in similar fields in the south of France, *e.g.*, *Trifolium stellatum*, *Anchusa italica*, *Linaria triphylla*, *Allium roseum*, *Reseda alba*, *Muscari comosum*, *Nigella damascena*, *Lathyrus Clymenum*, *Vicia gracilis*, *Euphorbia serrata*, *Specularia hybrida*, *Asperula arvensis*, *Convolvulus Althaeoides*, *Chrysanthemum coronarium*, *Scorpiurus subvillosus*, *Campanula Erinus*, *Bartsia Trixago*, *Sideritis romana*, *Rapistrum rugosum*, *Valerianella discoidea*, *Centranthus Calcitrapa*.

Our next expedition was to Randa, an isolated monastery—crowning a hill in the centre of the island. On its slopes many interesting plants were seen:—*Genista lucida*, a prickly species endemic in the Balearic Isles; *Ephedra fragilis*, a species unknown in France (nearly related to *Equisetum*); *Hedysarum capitatum*, *Paronychia nivea*, *Allium subhirsutum*, *Bifora dicocca*, *Rhagadiolus stellatus*.

By this time we had made up our minds that *Asphodelus microcarpus* must be the national flower of Majorca. We saw it everywhere, along every roadside, in the garigue, all the way up to the highest peaks of the Sierra, where its flowering time is a full month later than in the plain.

On April 17 we took a short trip to Genova, north-west of Palma to see the endemic *Hypericum balearicum*, and found it there in some abundance. According to Knoche, this is one of the three best marked Balearic endemics, being a very distinct species with no close affinities.

The 18th was spent in a very beautiful motor ride over mountain passes to Soller, Deya and Valdemosa; school inspection and conversation with village dignitaries did not leave much time for botanising that day. A halt at La Estaca, overlooking the sea between Deya and Valdemosa produced among other plants—*Brignolia pastinacaefolia*, *Tragopogon australis*, the parasite *Cytinus hypocistus*, *Lotus edulis* and *L. Ornithopodioides*. At the Port of Soller, a delightful cove reminding one of Lulworth, there was abundance of *Glaucium flavum*.

The next day I took the train to Arenal and had a lonely walk along the coast southwards to the headland, being rewarded by many good plants:—*Salvia clandestina*, with its pale blue flowers which I had seen before at Lavandon in the Midi; *Frankenia pulverulenta*, *Lithospermum apulum*, *Parietaria lusitanica*, *Euphorbia pithyusa*, *Bellium Bellidioides*, *Statice minuta* and *Statice duriuscula*, the two latter hardly in flower.

On April 20 we took a walk from the tram terminus at Son Roca over the wooded hill to Establiments, a rather rough walk but much to be recommended to a botanist. In addition to most of the garigue plants already listed we saw *Atractylis cancellata*, *Bupleurum aristatum*, *Thesium humile*, *Ononis reclinata*, *Ophrys Bertolonii*, *O. tenthredinifera*, *Urospermum Picroides*, *Sedum rubens*, *Limodorum abortivum*, *Serapias lingua* and *S. parviflora*.

The next day a long drive, and several visits to schools, left little time for botanising till we stopped for lunch at the lighthouse of Pollenza, in the north-east corner of the island, nearly 40 miles from Palma. Here for the first time we saw specimens of the curious hedgehog like plants, *Sonchus spinosus* and *Astragalus poterium*.

Knoche's theory is that the form of these plants is due, not to the wind, but to the dryness and warmth, and that possibly also it is assumed as a protection against animals, goats and pigs, the constant foes of vegetation. Other plants seen were the endemic *Aristolochia Bianorii*, with very small leaves; *Vincetoxicum nigrum*, *Althaea hirsuta* and *Crithmum maritimum*, the last growing as usual nearer than any other plant to the tideless sea.

On leaving Pollenza the cars took us up 2000 feet into the heart of the mountains where we were to spend the last few days of our stay at the Monastery of Lluch, now a school for boys who are being trained as choristers. There is also plenty of accommodation for pilgrims, of whom a large number were present. These pilgrims come from all over Majorca in their carts, whole families together, bringing their own food. There is also a restaurant where we had excellent meals for a moderate payment. We took the opportunity during our short stay of climbing several peaks, the highest being the Puig de Massanella, some 4000 feet. April is a little too early for a botanist in the Sierra. The plants seen included *Micromeria filiformis*, *Cyclamen balearicum*, a white endemic form which has been reported from France and is included in Coste's "Flora," but whose existence in that country Knoche denies; *Sibthorpia balearica*, another endemic variety; *Arabis verna*, *Linaria aequitriloba*, *Santolina Chamaecyparissus* so common in our gardens at home under the name of Cotton Lavender; *Acer italicum*, high up in the fissures of the limestone; the big grass *Ampelodesmos tenax* and another of the hedgehog plants, *Teucrium Marum*, forma *subspinosum*.

PERSONALIA AND VARIOUS NOTES.

On June 21, W. Jackson Bean was presented with his portrait painted by Ernest Moore which Major Reginald Loder had generously paid for. This portrait will ultimately be the property of the Royal Botanic Gardens at Kew. Lord Lambourne unveiled the excellent painting, which is reproduced in the *Gard. Chron.* ii., 2, 1927. The "spoken words" at the gathering were significant of the respect and esteem in which Mr Bean is held by fellow horticulturists.

Prof. C. H. Ostenfeld in June last gave the Masters Memorial Lecture on "Some Remarks upon Hybrids between Species in Flowering Plants."

Sir Sidney Harmer, under the age clause, is retiring as Director of our Natural History Museum at South Kensington, an office which he filled so excellently. However, it will give him more time for his work as President of the Linnean Society, and our good wishes go out to him in his new sphere of labour.

Mr Gerald Loder, President of the Royal English Arboricultural Society, has presented a Silver Challenge Cup to New Zealand with the object of encouraging the preservation and cultivation of the native flora of New Zealand. It may be recalled that the islands possess over 100 species of Veronica.

We are glad to see that the Royal Horticultural Society is progressing so favourably. Its membership increased by over 1400 in 1926. Wisely benefited by £12,000 being expended on it, the long overdue Catalogue of over 12,000 volumes in the Lindley Library is practically complete, while the great Index of Pritzel's "Icones" is well within sight. Lord Lambourne, its veteran President, has presented the oil portrait of himself, which was given him by the fellows and friends, to the Society.

Mr J. Ramsbottom has been appointed Deputy Keeper of the Department of Botany in the Natural History Museum in Cromwell Road.

Mr Charles Tate Regan, Keeper of the Zoological Department, has been chosen to succeed Sir Sidney Harmer as Director of the Natural History Museum, Cromwell Road.

The Gilbert White Fellowship. Annual Subscription, 7/6. Life Membership, 4 Guineas. Hon. Secretaries—Miss W. M. Danton, 14 Albert Mansions, Albert Bridge Road, S.W.11; G. J. B. Fox, 45 Stanwick Mansions, W. Kensington, W.14. The two addresses given in 1926 and 1927 by the President, Sir A. Daniel Hall, K.C.B., F.R.S., have been published in pamphlet form and give a charming account of the author of the Natural History of Selborne. He quotes Gibbon's vitriolic remarks about Oxford and its professors which had, of course, a grain of truth. White was educated at Oriel and obtained a College Living at Moreton Pinkney. Northamptonshire, however, could not claim him for White merely farmed it out and got £30 a year by the transaction --for the church no longer vital then exhibited nothing if not examples of pluralism. Sir Daniel gives a graphic account of the countryside of that time. These addresses are quite out of the stereotyped order, and give many vivid pictures of the times in which White wrote his Natural History. The Programme of the Society for 1928 bears testimony to the energy and ability of its officers. Sir W. Martin Conway is the new President.

The National Museum of Wales was formerly opened by their Majesties on April 21 at a ceremony characterised by great dignity and splendour. Everything went well and " music arose with its voluptuous sound " from a chorus of 300 voices. The building is set in an area which has no equal in any other city or town in Britain, and it is worthy of its surroundings. It has been exceptionally fortunate in its first keeper. It is extraordinary to find that so much of interest has already been brought within its walls. The Botanical Department, under the care of Mr Hyde, is a great success and to this Mr A. E. Wade and Miss Vachell have greatly aided. The beautiful paintings of wild flowers made by Dr Drinkwater find here a fitting resting place.

The National Museum of Wales. The Twentieth Report, 1926-7, gives an excellent view of the Museum front on the occasion of the official opening. The illustrations in the Report are most excellent. The attendances at the Museum for 12 months is nearly 200,000, an increase of 46,783 over the preceding year. The donations towards the capital expenditure amount to £278,231.

The public unveiling of the Memorial Windows at Oxford to Sir Christopher Wren, Elias Ashmole, and Robert Plot, was performed by the Chancellor of the University, Lord Cave, on May 13th. The public orator made a witty speech on Dr Plot. The Tradescent window was presented by the Garden Clubs of Virginia and was unveiled by Lord Fairfax in the previous November. Plot's window has, in the surrounding wreath, two plants, *Viola palustris* and *Geranium dissectum*, which " he was the first to recognise as new to the British Flora," but Morison, writing in 1686, says of the *Viola*, "Detecta fuit a Jacobo Bobart decenno abhinc," and he gives Bobart rather than Plot as the discoverer of the *Geranium*. Johnson had included it in his Kentish Catalogue of 1629. *Viola palustris*, too, was doubtless the *V. rubra striata eboracensis* from Yorkshire, described by Parkinson in 1640 (see *Fl. Oxf.* lxxvii.).

Society for Promotion of Nature Reserves. President, Viscount Ullswater, G.C.B. Hon. Secretaries, G. H. Smith, D.Sc., Lord Henley, E. G. B. Waldo. Handbook, 1927.

The National Trust has also issued a brochure on the subject. A gift of £20 to the Trust carries with it a life membership, while £100 entitles the donor to honorary membership. The Annual Report, 1926-7, occupies 100 pages. It includes a view of Tennyson Down, a munificent gift by Lord Tennyson of 155 acres of the magnificent Freshwater Down, in memory of his father. Many other valuable additions have been made during the year including the leasehold of a portion of Ennesdale of which a beautiful illustration is given. Bolt Head is also well delineated. For the purchase of the latter site £1200 is still needed.

Wicken Fen. Mr J. Stanley Gardiner publishes an account of this Nature Reserve. He mentions that 737 species of Lepidoptera occur, and this number suggests that at least 4000 species of insects occur as well as 161 Spiders, 13 Earthworms, 9 Harvestmen, and 17 Land Molluscs. Slaters, which have nothing to do with houses, are plentiful, each acre of fen-land having about half a million.

Bishop's Wood (Coed yr Esgob), near Prestatyn, Flint, (see *N.W. Nat.*, September 1927), a delightful bit of primitive scrub on steep limestone cliffs facing the sea behind Prestatyn, is now in the possession of the Prestatyn Council, and is to be preserved as a bird and plant sanctuary. Messrs J. D. Massey and W. G. Travis record *Tilia ulmifolia* Scop. (*cordata*), *Pyrus torminalis*, *P. rupicola*, *Prunus Cerasus*, *Cornus sanguinea*, *Euonymus europaeus*, *Taxus baccata* and *Juniperus communis*, while W. Chester and J. D. Massey add *Rubia peregrina*, and Mr Massey *Lithospermum officinale*.

The Ashridge Estate, comprising about 400 acres, has been acquired by the Zoological Society of London. It is intended to make it a sanctuary not only for the animal kingdom but also for rare plants. It once was the habitat of *Orchis militaris*.

The Seven Sisters Cliff, Eastbourne, has been saved for the National Trust at the cost of £18,000.

Scarborough Herb Garden. This very useful experiment is under the care of our member, Mr H. M. Hirst, F.R.H.S. He has freely given his services and the necessary expenditure on the garden is to be met by the sale of surplus plants. Any of our members who are cultivating herbs might obtain seeds or plants by applying by letter to 66 Esplanade Road, Scarborough.

Microscopes. Messrs R. & J. Beck, 68 Mortimer Street, London, have now British made objectives—a ⅔ in. apochromat which resolves the dots in *Pleurosigma formosum*, dot interspaces 36,000 per inch; ⅓ in. shows resolutions in dots in *Navicula rhomboides*, dot interspaces 66,000 per inch; ⅙ in. shows resolutions in dots in *Amphipleura Lindheimerii*, dot interspaces 90,000 per inch.

The Rev. W. Keble Martin, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send him fresh specimens.

Mr F. J. Hanbury, Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

Mr A. E. Wade, Botanical Department, the University of Cardiff, is contemplating the preparation of a Flora of Monmouthshire, and would be glad of assistance.

Mrs Isabel Adams, F.L.S., is painting British Aquatics. Members wishing to help in collecting specimens are asked to communicate with her at 14 Vernon Road, Edgbaston.

Mrs Perrin, 23 Holland Villas Road, London, W.14, is continuing her beautiful paintings of British plants. Members willing to assist in collecting specimens are asked to write to the above address.

Mr H. Britten, 42 Millfield Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

Mr T. A. Dymes, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Corallorrhiza*, *Cephalanthera longifolia* and *C. rubra*, the Irish *Spiranthes* (north and south), *Listera cordata*, *Epipogium* and *Ophrys Trollii*.

The City of Leicester Museum (E. G. Lowe, Ph.D., B.Sc., Director). At the University College is being formed a collection of living plants arranged according to the Families by Mr O. Bemrose, the Museum, Leicester. He is very anxious to obtain seeds and specimens of British Plants, and it is trusted that our members will assist him.

Transplant Committee of the British Ecological Society.—Appeal for Funds. As a result of a suggestion by the Director of the Royal Botanic Gardens, Kew, the British Ecological Society have formed a Committee with the object of undertaking experiments on the effect of differing conditions on the form, structure, and other characters of plants of identical genetic constitution. The Committee consists of Prof. A. G. Tansley, Prof. F. W. Oliver; Dr E. J. Salisbury, the President of the Ecological Society; and Mr W. B. Turrill (Secretary). In the first instance it has been decided to experiment on six species, using only plants derived from seed of known origin and genetic constitution, and growing 25 specimens of each species on each of several different soils of selected types, side by side in the same locality. The initial experiments are to be carried out in the grounds of Mr E. M. Marsden-Jones at Potterne, Wilts, and the necessary cost of obtaining and transporting soils and of making the beds is about £200 apart from running expenses. Part of this sum has already been collected but more is wanted and contributions from members of the Botanical Society and Exchange Club would be gratefully received. Subscriptions should be sent to Mr W. B. Turrill, Hon. Sec. of the Committee, The Herbarium, Royal Botanic Gardens, Kew, Surrey. Cheques and Postal Orders may be crossed “Transplant Committee Fund (c/o Dr A. W. Hill), Barclay’s Bank, Ltd., Kew Green Branch.” The Director of the Royal Botanic Garden, Kew, strongly supports the foregoing scheme, which we have the pleasure of commending to our readers. It is mainly by comparative cultures of authentically named plants that their true grades can be ascertained, and if a tenth of the time given during the last ten years to laboratory experiments had been devoted to this work, by this time our knowledge of the British flora would have been made vastly more accurate.

CORRECTIONS AND ADDITIONS, 1925 AND 1926 REPORTS.

Report 1925.

p. 947. Line 13. For “*Stachys*” read “*Salvia*.”
p. 975. Line 7. For “*linifolium*” read “*longiflorum*.”

Report 1926.

p. 63. Line 30. For “*oleraceam*” read “*oleraceum*.”
Line 44. For “*nanus*” read “*minor*.”
p. 73. Line 7. For “appears” read “is.”
Line 43. Add after *macrophylla* “The specimen is, as I predicted, *Lactuca macrophylla*, not *alpina*.”
p. 92. Line 1. For “*Botrychium*” read “*Matricariae*.”
p. 100. Line 27. For “dog” read “hound.”
p. 107. Line 9. For “MONTANA” read “STAGNINA.”
p. 109. Line 24. et seq. For “Geer” read “Glew.”
p. 110. Line 27. For “Cardiff Dock, Glamorgan,” read “Colchester, Essex.”
p. 116. Line 33. For “VALERIANELLA” read “VALERIANA.”
Line 35. For “Dalveston” read “Dulverton.”
p. 119. Line 1. For “NEMOROSA” read “NEMORALIS.”
p. 131. Line 25. For “Monmouth” read “Isle of Wight.”
p. 205. Line 4. For “fiftieth” read “fifteenth.”
p. 210. Line 24. For “MANEGAZZIANUM” read “MANTEGAZZIANUM.”
p. 211. Line 33. For “Dagenham, Essex, R. MELVILLE” read “Splott, Glamorgan, R. L. SMITH.”
p. 255. Line 14. The Godalming specimen is “*Stellaria neglecta*,” not “*S. aquatica*.”
p. 266. Line 5. Is this not *Steironema ciliatum*?
p. 269. Line 14 and 20 (teste Lumb) and 270, line 43, are all *E. Kerneri*.

Report 1923.

p. 218. Line 4. For “BEADELL” read “BIDDISCOMBE.”
Plate II. opposite p. 212 should be titled BOTRYCHIUM MATRICARIAE (Schrank) Sprengel.

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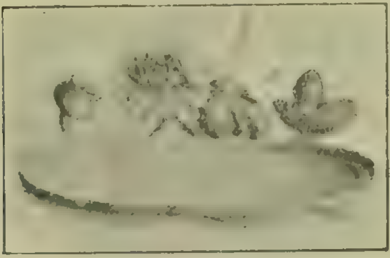

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REPORT OF THE DISTRIBUTOR FOR 1927.

As might have been expected after such an unfavourable collecting season as the summer of 1927 proved to be, the number of plants contributed to the Exchange was below the average: 28 members sent in 4485 sheets. The greater part of these came as a result either of critical study by members of the variations of well-known British plants, or of the equally interesting problems of the occurrence of plants of alien origin. A series of beautifully prepared American plants came from Professor Beattie and a very welcome Canadian gathering of *Ludwigia palustris* from Fr. Arsène, our largest contributor.

From the personal point of view the Distributor gratefully records the evident pains taken by all the more experienced contributors to lighten his task. One small suggestion he has to make is that flimsy water plants, which have a troublesome habit of adhering to the sheet immediately above, should always be placed separately in folded covers.

Mr Wall's suggestion in last year's *Report* that all the labels for any one gathering might well be placed together at the beginning of the gathering, rather than distributed among the sheets, was generally adopted, and a very considerable saving of time in stamping resulted.

The thanks of the Club are again due to Mrs E. S. Gregory, Drs E. Drabble and G. C. Druce, Messrs A. Bennett, C. E. Britton, J. Fraser, L. V. Lester-Garland, W. O. Howarth, W. H. Pearsall, C. E. Salmon, Rev. H. J. Riddelsdell and Col. Wolley-Dod for their notes on the critical plants submitted to them.

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LIST OF PLANTS RECEIVED.

	Gatherings.	No. of Sheets.
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W. Biddiscombe, ...	4	40
J. Fraser, ...	4	83
J. E. Little, ...	22	300
J. E. Lousley, ...	39	537
C. E. Britton, ...	20	254
F. Rilstone, ...	12	163
R. Bulley, ...	8	67
J. W. White, ...	9	101
Miss R. Bright, ...	2	23
J. W. Long, ...	3	44
G. C. Brown, ...	13	131
L. V. Lester-Garland, ...	2	31
F. S. Beattie, ...	27	270
R. L. Smith, ...	9	156
C. E. Salmon, ...	1	9
National Museum of Wales, ...	6	71
Rev. R. J. Burdon, ...	4	59
A. Wilson, ...	4	66
R. & M. Corstorphine, ...	2	28
Miss I. M. Roper, ...	11	176
R. Melville, ...	10	122
W. A. Sledge, ...	3	59
I. A. Williams, ...	7	41
C. V. B. Marquand, ...	7	67
	334	4485

Ranunculus auricomus L. Depauperate type (with reduced number of petals). Meadow near the River, Kew, Surrey, April 19, 1926.—C. V. B. **Marquand.** "The paper on this species by Professor Weiss should be consulted; see p. 299. This is the var. *depauperata* Hook. f."—**Druce.**

Ranunculus bulbosus L., var. *dunensis* Druce. Sandy plains and dunes, Bel Royal, May 20, 1926. This plant is very common in its true habitat, especially on the Quennevais, St Aubin's Bay, and St Ouen's Bay. It is certainly not *R. Alcae* Willk., whose stock though swollen is not bulbous. I observed carefully a great number of Jersey plants, and I never found a single one that was cormless. The assertion of the *Cambridge Flora* that *R. Aleae* is very common in St Ouen's Bay cannot be true. The type is not rare in meadows, hedges and roadsides.—L. **Arsène.** "I quite agree with Fr. Arsène in his opinion that it is not *R. Aleae.* I examined thousands of plants in the area in which that plant was asserted to have been found, but never saw a cormless plant. The one on which *Aleae* is described in the *Cambridge Flora* must have been an abnormal plant of *dunensis*, which seems to be distinct from *valdepubens* Jord."—**Druce.** "Unfortunately, my specimen does not show ripe fruit, but it is certainly not *R. Aleae* Willk. The well-developed corm and the peduncle furrowed to the base are not those of *Aleae.* The *Cambridge Flora* seems to be quite wrong about *Aleae.*"—**Drabble.**

Ranunculus heterophyllus Weber, var. *trifidus* W. H. Pearsall. [Ref. No. Y.122.] Pond on Mitcham Common, Surrey, May 10, 1927. This series shows great variation in the floating leaves, which in some specimens are completely absent. The submerged leaves were not naturally quite so tassel-like as they appear in these dried examples. The stamens were numerous.—J. E. **Lousley.** "Correctly named, but the floating leaves of the plant are not typical on my specimen. This name has been substituted for that of *triphyllus* (Hiern) as being not liable to be confused with that of *triphyllus* Wallroth. The carpels of Mr Lousley's plant are, however, much nearer to those of Wallroth's plant than those of any British specimens I have seen. Those on my sheet are quite glabrous, but scarcely 'glaberrimis nitidis.' I should be interested to see further complete and mature examples of this plant next year."—W. H. **Pearsall.**

Batrachium peltatum Fr. A small form. Wurple Pool on Barrow Hill at 600 ft., N. Somerset, May 27, 1927.—J. W. **White.** "A weak and untypical form of this species with nearly glabrous carpels."—**Pearsall.**

Ranunculus peltatus Schrank, forma *truncatus* Koch. [Ref. No. Y.127.] Pond near Hand in Hand between Box Hill and Headley, Surrey, May 29, 1927.—J. E. **Lousley.** "My sheet shows typical *R. peltatus*, with densely hairy capsules. None of its leaves are truncate."—**Pearsall.**

Ranunculus Ficaria L., forma *luxurians* Moss. Wet places; much less common than the type. Seems to be a true variety. La Haule, March 16, 1926.—L. ARSENE. "I agree with Fr. Arsène and have put *luxurians* as a variety in the *List*. The fruits are distinctly hairy."—DRUCE.

Actaea spicata L. Hayton Wood, Aberford, W. York, May 28, 1927.—W. A. SLEDGE.

Papaver Rhoeas L., var. [P.P. 99.] Garford, Berks, July 1927.—G. C. DRUCE.

Papaver hybridum L. Splott, Cardiff, Glamorgan, May 1927. These plants were growing in company with *Roemeria* and were introduced from the same source.—R. L. SMITH.

Glaucium corniculatum Curt. Allotments, Splott, Cardiff, Glamorgan, September 1927. Grain-sifting alien.—Coll. A. E. WADE; Comm. NATIONAL MUSEUM OF WALES.

Roemeria hybrida DC. Splott, Cardiff, Glamorgan, May 1927. This plant appeared sparingly on some allotments at Splott in 1926, where it was seen by a number of our members, including Dr Druce. This year quite a number sprang up; in fact, I saw over sixty plants in a space about three yards square. Introduced with grain refuse.—R. L. SMITH. "Beautiful specimens of an acceptable plant."—DRUCE. "Yes, *R. hybrida* (L.) DC., var. *eriocarpa* (DC.), which is only a form with bristles all up the capsule, instead of only at the top."—LESTER-GARLAND.

Fumaria capreolata L. Cliff slopes, Polperro, E. Cornwall (Mrs Perrycoste's locality), June 24, 1927.—F. RILSTONE.

Fumaria capreolata L. [Ref. No. 3201.] Near Rhyl, Flint, July 15, 1927.—C. E. BRITTON.

Fumaria occidentalis Pugsley. Top of hedge, Lambourne, W. Cornwall, June 6, 1927.—F. RILSTONE.

Mathiola sinuata (L.) R. Br. Sandy shores, dunes, St Ouen's Bay, Jersey, June 5 and July 7, 1926.—L. ARSENE.

Radicula sylvestris Druce. Hillgrove, Lurgashall, W. Sussex, July 25, 1927.—R. J. BURDON.

Arabis petraea Lam. Sgurr nan Banachdich, c. 2400 ft. altitude, Isle of Skye, July 8, 1925.—C. V. B. MARQUAND. "Yes, the hairy-leaved *A. petraea*, var. *hispida* DC."—DRUCE.

Cardamine amara L., var. *rubescens* Peterm. New Haw Lock, Addlestone, Surrey, v.-c. 17. So far as I have discovered, there are two stations for this variety in Surrey. The lilac purple colour is mostly on the back of the petals, but is liable to fade more or less in course of time when dried. There is a sheet of this variety in the Herbarium, Royal Gardens, Kew, from the above station.—J. FRASER.

Erophila verna E. Meyer. (*E. vulgaris* DC.). [Ref. No. Y.119.] Track near top of Cronkley Fell, N.W. Yorks. July 1927.—J. E. LOUSLEY. "Yes, *verna* Meyer (*vulgaris* DC., sensu stricto)."—DRABBLE.

Erophila verna E. Meyer, var. *stenocarpa* (Jord.)? [Ref. No. Y.136.] Gravelly bank on Hythe Rifle Ranges, Kent, April 18, 1927.—J. E. LOUSLEY. "*E. verna* Meyer (*vulgaris* DC., sensu stricto); not *stenocarpa* Jord."—DRABBLE. "Mine seems a mixed gathering, but none of them should I name *stenocarpa*; the fruits are too short and too broad, even broader than Y.119 from Cronkley Fell, which is a neat little plant."—DRUCE.

Cochlearia anglica L. Bank of Avon below Bristol, West Gloucestershire, July 2, 1927. The Bristol plant differs from that figured in *English Botany* and from some I gathered on the lower Thames. The pods are shorter and broader, and the leaves less entire.—J. W. WHITE.

Sisymbrium orientale L., var. *subhastatum* (Willd.) Thell. [Ref. No. 2413.] "Gasworks Folley," Colchester, N. Essex, v.-c. 19, June 3, 1927.—G. C. BROWN. "Correctly named."—DRUCE.

Sisymbrium officinale (Scop.), var. *leiocarpum* DC. Waste ground, Slough, Bucks, July 23, 1927; also from roadside between Peasemarsh and Bramley, Surrey, September 24, 1927.—I. A. WILLIAMS. "Correctly named."—DRUCE. "Yes, with the pods quite glabrous. This variety is, however, by no means uncommon in Surrey."—LOUSLEY.

Brassica Cheiranthos Vill. Yarnton Railway, Oxon, September 1927.—G. C. DRUCE.

Erucastrum Pollichii Spenn. Splott, Cardiff, Glamorgan, July 1926.—R. L. SMITH. "It is *Brassica gallica* (Willd.) Dr. (=*Erucastrum gallicum* = *E. Pollichii*). *Gallicum* is the oldest trivial."—DRUCE.

Eruca ——? Splott, Cardiff, Glamorgan, July 1926. A grain alien. This may be only a variety of *E. sativa* Mill., but it looks quite distinct from the type.—R. L. SMITH. "Yes, *Eruca Eruca* (L.)."—DRUCE.

Bursa pastoris Weber, var. [Ref. No. 1.] Wall-side, Newton Lane, Avenue, Chester, June 1927.—C. WATERFALL.

Bursa pastoris Weber, var. [Ref. No. 2.] Wall-side, Shavington Avenue, Chester, June 1927.—C. WATERFALL.

Bursa Druceana E. At. [Ref. No. Y.142.] Gravel Pit near Hayes, Kent, June 17, 1927, leg. F. A. SWAIN.—J. E. LOUSLEY.

Bursa Druceana E. At. [Ref. No. Y.64.] Roadside by the Vicarage, Langdon Beck, Forest-in-Teesdale, Durham, July 10, 1927. In this district there is practically no cultivated land and weeds of cultivation are very rare. These plants collected from an area of less than three square yards seem to me remarkable for lack of variation between individuals.—J. E. LOUSLEY.

Bursa mediterranea E. At. [Ref. No. Y.145.] Rickground on roadside beween Oxted and Titsey Hill, Surrey, June 19, 1927.—J. E. LOUSLEY.

Bursa ——? [Ref. No. Y.123.] Cultivated fields above Riddlesdown, Purley, Surrey, November 11, 1927.—J. E. LOUSLEY.

Coronopus didymus Sm. Waste ground near sandhills, Birkdale, Southport, August 1927.—R. BRIGHT.

Lepidium Draba L. Quarry spoil bank, near Denholme Lane Colliery, Flintshire, July 2, 1927.—C. WATERFALL.

Lepidium chalepense L. Burton, Staffordshire, July 1927.—G. C. DRUCE.

Lepidium virginicum L. Waste ground near Yiewsley, Middlesex, June 26, 1927.—R. MELVILLE.

Hutchinsia petraea (L.) R. Br. Maritime sands and dunes, Le Quennevais, Jersey, April 5, 1926.—L. ARSENE.

Bunias orientalis L. On disused rubbish tips at Dagenham Dock, Essex, with *Heracleum Mantegazzianum* and *Euphorbia virgata*, all of which appear to have been in this spot for a number of years, May 13, 1927.—R. MELVILLE.

Reseda alba L. Waste ground near sandhills, Birkdale, Southport, August 1927.—R. BRIGHT.

Helianthemum canum Baumg., var. *vineale* Pers. [Ref. No. Y.62.] In plenty on a sugar-limestone hillock some short distance from Whitewell, Cronkley Fell, Teesdale, N.W. Yorks, with *H. Chamaecistus*, var. *tomentosum*, July 10, 1927. T. A. Lofthouse (describing his finds in the Eastern Pyrenees in *Journ. Royal Hort. Soc.*, 167, 1927, says—"*Helianthemum canum* with pretty clusters of bright yellow flowers, and a pale sulphur-coloured form, not so stiff or dwarf as the *H. canum* known to me in a very exposed position in the north of England. The English plant appears to be the *H. marifolium*, a rare form figured in Bonnier's Flora."—J. E. LOUSLEY. "The nomenclature of this plant is very confused, but we await evidence of the occurrence of true *marifolium* in Britain."—DRUCE.

Viola epipsila Ledeb. Burghfield, Berks, May 1927.—G. C. DRUCE.

Viola palustris L., var. *epipsila* Ledeb. [Ref. No. Y.135.] Bog beside stream on Burghfield Common, Berks, June 5, 1927. I have purposely cited as above. The locality is one of the earliest for this plant. See *British Violets*, p. 34, where Dr Druce's gathering is noted. In 1926 I visited Burghfield Common, but was unable to find *epipsila* at all. In 1927 I found a small patch after considerable search, where it grew very much intermingled with typical *palustris*. The gathering was carefully made to consist of plants with more or less hairy petioles. The interesting result was that many of the plants with hairy petioles were without the acute apex to the leaves, and in fact had most obtuse apices (I have marked some examples with blue crosses). The floral characters seemed exactly the same as typical *palustris*. Thus I found no character except the hairy petioles to differentiate the two plants, and even this is most variable. Intermediates are most frequent, and we are left without a definite character to tell var. *glabrescens* from *palustris*. Admittedly the leaf apices vary with age, the later leaves apparently being more typical. The numerous intermediates might be explained away by hybridism. If so, does *epipsila* ever occur by itself? If it is a good species, it would surely be reasonable to expect it to. What is the present opinion?—J. E. LOUSLEY. "Of the Burghfield *epipsila* Dr Druce wrote, when sending the specimens in 1912—'Flowers to supplement the fruiting plants I sent last year. In this stage the plants are practically glabrous, and I was afraid the character which chiefly separates it from *palustris* had broken down; but I brought a few roots home and placed them in a cool house, where, within a month, the later leaves had the veins and peduncles hairy.' This character of late hairiness differentiates the plant from *V. palustris*, which is reported to have 'the *least-developed* leaves slightly hairy.' Other points of difference are:—

	V. PALUSTRIS.	V. EPIPSILA.
Underground Stems.	Slender, sometimes reddish.	Thick, clothed with brown hairs.
Stipules.	Green, tinged with red, membranous.	Brown.
Leaves.	With no points, almost entire.	Early leaves without points, later ones with or without points. All toothed irregularly.
Bracts.	Variously placed.	*Always* above middle of peduncle.
Sepals.	Obtuse.	More pointed than in *palustris*.
Petals.	Small, round.	Thicker; lower petal strongly contracted, with 9 slightly-branching veins.
Spur.	Flat, obtuse, *slightly longer* than appendages of calyx.	Flat, broad, *twice as long* as appendages.
Capsule.	Small, roundish.	In dehiscence, 1 cm. in length.

British *epipsila* has hairy peduncles. In a *Supplement* to Davey's *Flora of Cornwall*, published in 1922, by Edgar Thurston, Esq., C.I.E., and

Chambré C. Vigurs, B.A., M.D., Cantab, Dr Vigurs inserts this note—'I find this species much more plentifully than the true *V. palustris*, and think that if field botanists studied the plants, it would be found that *V. epipsila* is the common Cornish Marsh Violet'."—E. S. GREGORY.

Viola cornuta L. Waste ground adjoining the Boughton Hall Cricket Ground, Chester, June 1927.—C. WATERFALL. "Yes, a mere garden escape. The material consists of mere scraps and is quite inadequate. It should not be necessary again to repeat the instruction that only entire plants are of any use in the pansies."—DRABBLE.

Viola [*agrestis*] Jord. [Ref. No. Y.139.] Field by Tot Hill, Headley, Surrey, July 23, 1927.—J. E. LOUSLEY. "Not *agrestis*, which is a hairy plant with the lateral branches spreading widely from the base of the plant, and, when well grown, much longer than the main stem. This is *V. segetalis* Jord."—DRABBLE.

Viola [*segetalis*] Jord. [Ref. No. 3269.] Ashtead, Surrey, September 3, 1927.—C. E. BRITTON. "No, this is *V. agrestis* Jord. The material is well prepared, but all the sheets do not show the spreading basal branches so characteristic of mature and well-grown plants."—DRABBLE.

Viola [*arvatica*] Jord. [Ref. No. Y.129.] Cultivated fields near Burghfield Common, Berks, June 5, 1927. I had doubts as to whether this might possibly be a young form of something else, and hence included in the gathering the most branched plants I could find.—J. E. LOUSLEY. "Not *arvatica*, of course. *Arvatica* is an *arvensis* pansy of very slender growth and widely divaricate peduncles. This is *V. vectensis* F. N. Williams. The plants are less hairy than the isle of Wight specimens, but otherwise quite typical."—DRABBLE.

Polygala dubia Bellynck, var. *dunensis* Dumort. Sand dunes, plains, and heaths, Le Quennevais, Jersey, April 5, 1926.—L. ARSENE. "I believe Dumortier described his *dunense* as a species, but Fr. Arsène has, I think, correctly made it subordinate to Bellynck's *dubium*."—DRUCE. "In spite of this plant growing on sand dunes I should prefer to leave it under *dubia*. At any rate, it does not correspond with Dumortier's description of *dunensis*."—SALMON.

Frankenia laevis L. Near Wootton, Isle of Wight, September 1927. —J. W. LONG.

Dianthus prolifer L. Maritime sands and dunes, Le Quennevais, Jersey, June 15 and July 7, 1926.—L. ARSENE.

Silene nutans L., var. *dubia* Herbich. Dry places, cliffs, and hillsides, St Peter's, Jersey, May 18, 1926. Many French botanists do not recognise this variety, which certainly grows in Brittany and Normandy as well as in Jersey.—L. ARSENE.

Silene conoidea L. Highlands College, Jersey, June 1, 1926. Raised in our garden from seed coming from France. This species is reported as native in Jersey in the *Cambridge British Flora*; but in spite of all my researches I could not find it on the island except once in 1923 in a waste place near the harbour of St Helier, where it did not persist. Dr Druce wrote to me that he has a specimen from a rubbish heap at St Ouen's, but it seems probable that the plant has long ago disappeared from that locality. It may be introduced in cultivated ground, but certainly is not native in Jersey. Its area of extension in France does not reach the 45th degree of latitude. Very likely it was mistaken for a larger form of *Silene conica*, which is sometimes found in sheltered places or in wet ground among grass. This error was made in Normandy in Brébisson's time. In his *Flore de Normandie* (3rd edition, 47, 1859), he writes: "Nous ne trouvous pas en Normandie le véritable *S. conoidea* L., mais simplement une variété du *S. conica* à capsule plus allongée, à feuilles plus larges et à pétales à peine bilobés."—L. ARSENE. "Welcome specimens. In *Journ. Bot.* 47, 1926, I drew attention to the plate in the *Cambridge Flora* so named, which is a form of *conica*, therefore Fr. Arsène's remarks corroborate that statement. As a native plant *conoidea* must be deleted from the Jersey flora."—DRUCE.

Lychnis ——? Ely, Cardiff, June 1927. This plant appeared spontaneously in my garden, and looked strange from the beginning. It is completely glabrous, obviously perennial, but not very showy. The single plant produced about seven hundred flowers, but not a single ripe capsule.—R. L. SMITH. "*Lychnis Preslii* Sekera. I am glad to see this plant from another habitat, since I am afraid it is destroyed at Tantallon, where Miss Trower first found it. Its true grade—species, variety or mutant has yet to be ascertained. It produces abundant seed in my garden and has hybridised with *L. dioica*."—DRUCE.

Cerastium arcticum Lange. Damp rocks at 2600 feet altitude on Sgurr nan Banachdich, Cuillin Mountains, Isle of Skye, July 1925.—C. V. B. MARQUAND. "Yes, identical with the Ben Nevis plant. It was first found in Skye by Prof. M. A. Lawson and H. G. Fox, but labelled by them *alpinum*. The older and more correct name for it is *C. nigrescens* Edmondst."—DRUCE.

Stellaria neglecta Weihe. [Ref. No. 3.] Near Ro Wen, Carnarvonshire, June 1927. This large chickweed is quite a feature of damp hedgebanks, etc., in this part of the county and it occurs also in the adjoining districts of Denbighshire. Its tall stems, conspicuous flowers with ten stamens, hairy pedicels and calyx, and the large acutely-tubercled seeds well separate it from *S. media*. It looks very different from the latter when growing, and almost recalls *S. nemorum*. It is not mentioned in Mr J. E. Griffith's *Flora of Carnarvonshire*.—A. WILSON.

Sagina filicaulis Jord. [Ref. No. 693.] Cornfield east of Oakfield, St Ippolyts, Herts, October 5, 1926. For notes see *W.E.C.R.* 375, 1926.

—J. E. LITTLE; det. C. E. SALMON. "Mr Little kindly sent me fresh specimens of this and I agree with his suggestion as to the name. Closely allied to *S. ciliata*, but differs in habit, hair-like peduncles, smaller flowers, shape of sepals, etc."—SALMON. "Yes."—DRABBLE.

Spergularia atheniensis Asch. & Schw. (*S. campestris* (Kindb.) Willk. & Lange). Gorey, Jersey, July 1, 1926. Dry places, roadsides, sandy bays, all along the coast from St Catherine's Bay to St Aubin's. Very likely introduced, though it may be native. Not reported by Lloyd in his *Flore de l'Ouest de la France*.—L. ARSENE. "Yes, it is pleasing to see that Fr. Arsène has found it over an extended area. I am inclined to think it native since it also grows at L'Etee, Guernsey. Its more correct name seems to be *S. Bocconei* (Soleir.) Steudel. This gets rid of the misleading name *campestris*."—DRUCE.

Spergularia rubra Presl, forma. Waste ground, Hythe Quay, Colchester, v.-c. 19, June 3 and September 1927. This puzzled Mr Melville and myself in 1926. Further and fuller material, however, shows, I think, that it is only a viscid and glandular form of *S. rubra*, though *S. atheniensis* was at first suspected.—G. C. BROWN.

Montia verna Neck., var. *intermedia* (Beeby) Druce. Damp places, pond at Le Ouaisne, Jersey, March 29, 1926.—L. ARSENE. "Yes."—DRUCE.

Lavatera cretica L. Maritime sands, introduced and rare. St Ouen's Bay, Jersey, July 15, 1926.—L. ARSENE.

Geranium purpureum Vill. La Haule, Jersey, May 15, 1927, coll. by Bro. ARISTE. Dry places, hedges and banks, and exposed hillsides; less common than *G. Robertianum*.—L. ARSENE.

Erodium [*commixtum* Jord.]. [Ref. No. Y.124.] Sandy soil, field by Anchor Inn, Pyrford, Surrey, May 24, 1927. Stigmas violet, beak of fruit with a few white hairs, two upper petals spotted, the rest unspotted; stems diffuse; plant very remarkably large, well over a yard across; peduncles 4-6 flowered; petals a pinkish-red in colour, longer than the calyx.—J. E. LOUSLEY. "Agrees in several points with Jordan's description, but there is no ripe fruit on Mr Lousley's specimens to show the number of awn-twists—there should be 6-7. Jordan also states 'foliis saepe molliter pilosis . . . sepalis . . . pilis saepe patentibus glandulosis undique tectis' and 'foliolis petiolulatis' for this species, characters wanting in these specimens. On the whole, I think it is better placed under *E. triviale* Jord. in spite of the petals being spotted—a feature unmentioned by Jordan in his description of this species. In any case, this feature is not a very stable one."—SALMON.

Ononis repens L. Near Albury, Oxon, September 1927.—G. C. DRUCE.

Medicago Falcata L. Grassy bank, Dagenham Dock, S. Essex, August 6, 1927.—Coll. J. E. COOPER; comm. G. C. BROWN.

Medicago Falcata L. Waste ground, Slough, Bucks, October 1, 1927. Locality shown me by Mr F. Druce.—I. A. WILLIAMS.

Medicago Falcata L., var. *tenuifoliolata* Vuyck. Barry Dock, Glamorgan, September 1926. Adventive, but thoroughly naturalised in this locality. I believe this is the common adventive form found in this country.—R. L. SMITH.

Medicago Falcata L. × *M. sativa* L. Grassy banks, Dagenham Docks, S. Essex, August 6, 1927. Confidently named as above by the collector, Mr Cooper, in spite of the apparently perfect fruit. The influence (or predominance) of *M. sativa* is obvious and *M. Falcata* grew on the same spot. I forward it under Mr Cooper's label.—Coll. J. E. COOPER; comm. G. C. BROWN.

Medicago denticulata (Willd.). Railway embankment, near Dawlish Warren Station, S. Devon, September 15, 1927.—I. A. WILLIAMS.

Melilotus sulcatus Desf. Waste ground, Hythe Quay, Colchester, October 6, 1927. Teste Kew. Not seen since 1914.—G. C. BROWN.

Trifolium agrarium L. Near Dundee, Forfar, July 1927.—G. C. DRUCE.

Trifolium dubium Sibth., var. *pygmaeum* Soy.-Will. [Ref. No. Y.151.] Gravel pits on Worms Heath, Warlingham, Surrey, June 19, 1927. This variety is distinguished from the type by its prostrate habit, small size, and few-flowered heads. The size is intermediate between *dubium* and *filiforme*, from which it is easily distinguished by the deep notch in the standard, the less robust appearance, and the quite sessile leaflets of the latter. This variety seems fairly common in Surrey and Kent in gravelly places, and it is possible that it may at times have been mistaken for *filiforme*. The plants growing in cart-tracks and dips on the surface of the pit were much larger in every way than those growing on the more exposed level ground. From this I infer that *pygmaeum* is in all probability only an ecological state.—J. E. LOUSLEY.

Trifolium [*squarrosum* L.]. Hedge bank near Buriton, Hants, in quantity; it has also been found near Aldershot, and in Surrey, August 1927.—W. BIDDISCOMBE. "The plant I have received is not this but *T. medium* L."—BRITTON. "Not *squarrosum*, I think; the calyx is not urceolate nor is it closed in the throat by two lip-like callosities. Why not *medium*?"—DRABBLE.

Trifolium resupinatum L. Salted meadows and waste places near the sea. Seems to be native as in the maritime parts of Brittany. St

Ouen's Bay, Jersey, in a meadow near the pond, July 15, 1926.—L. Arsene. "Yes, a rather robust form approaching var. *robustum* R. & T."—Druce.

Ornithopus roseus Dufour. Sandy field, St Peter's, Jersey, June 15, 1926. Alien of very rare occurrence in Jersey. Not native north of Loire-Inférieure in Brittany, where it is common.—L. Arsene. "The long beak to the fruit seems to bring this under var. *macrorrhychus* Will. Fl. Hisp. iii. 261."—Lester-Garland. "Yes, a pretty plant that I have seen in Essex and Surrey."—Druce.

Vicia lutea L., var. *caerulea* Archang. Ware, Herts, October 1927. —G. C. Druce.

Vicia sativa L., var. By maltings, Hythe Quay, Colchester, N. Essex, May 22, 1927. A neat pale-flowered form of *V. sativa* of alien origin, with small neat leaves and flowers pink, with darker wings. No fruit was produced.—G. C. Brown.

Vicia tetrasperma Moench, var. *tenuissima* Druce. [Ref. No. Y.126.]. Roadside near Leigh, Surrey, May, 29, 1927. Some of the lower leaves approach type *tetrasperma*.—J. E. Lousley. "Yes."—Druce.

Vicia Ervilia (L.) Willd. St Peter's, Jersey, July 15, 1926. Introduced in grain fields, but rare. This plant being a calcicole will very likely not thrive on the island.—L. Arsene. "Yes, it is based on *Ervum Ervilia* L."—Druce.

Rubus idaeus L. Near Winchester, August 1927. This peculiar variety or sport was found growing among some wild raspberries in a copse near Winchester. The leaves are all ternate and stems downy and unarmed; the drupes of a light transparent red, and only one or two developed. It was suggetsed to me that it may be a hybrid between *idaeus* and *caesius*.—Coll. C. A. Cook; comm. W. Biddiscombe. "A curious sport, producing some fruit. In a dried specimen it is hard to see what has happened. There appear to be two or more rows of sepals. It does not look like a hybrid, in my opinion.—Riddelsdell.

Rubus affinis W. & N. Hedge above Publow, N. Somerset, August 12, 1907.—J. W. White. "One or two leaves look like *affinis*; but most of the gathering is something else (perhaps all of it). I cannot name." —Riddelsdell.

Rubus argenteus Wh. & N. Perranzabuloe, W. Cornwall, August 1927. In Perranzabuloe Parish, where *R. argenteus* is abundant, I frequently find these abnormal panicles associated with others of more normal form, on the same plant and often on the same stems. Such plants are often fungus-infested, but some of the slender-pedicelled panicles are, as far as I can see, clean and healthy. On the other hand, I am inclined to think the panicles of more usual form, represented by (b), are never quite typical *argenteus*.—F. RILSTONE. "*R. argenteus*—fairly typical except as stated by Rilstone. In the abnormal panicles are to be found several degrees of abnormality; in some cases the sepals behave quite normally, in others not. Pedicels usually very long and slender, prickles very numerous, strong and falcate, etc."—RIDDELSDELL.

Rubus leucostachys Sm. Wayside, Lower Failand, North Somerset, September 5, 1927.—J. W. WHITE. "Yes."—RIDDELSDELL.

Rubus lasioclados Focke, var. *angustifolius* Rogers. Durdham Down, Bristol, W. Gloucester, August 4 and 19, 1927.—J. W. WHITE. "Yes."—RIDDELSDELL.

Rubus echinatus Lindl. [Ref. No. Y.170b.]. By Boldermere, Wisley, Surrey, August 1927.—J. E. LOUSLEY. "Yes, all *R. echinatus* Lindl."—RIDDELSDELL.

Potentilla fruticosa L. [Ref. No. Y.78.] Tees-side by Cronkley Farm, below Cronkley Fell, Upper Teesdale, N.W. Yorks, July 12, 1927. See *Journal of the Royal Horticultural Society*, p. 83, January 1927, where an excellent note on the distribution and variations of this species is to be found.—J. E. LOUSLEY.

Potentilla norvegica L. Waste ground, Queen St., Hitchin, Herts, August 27, 1927.—J. E. LITTLE. "Yes."—DRUCE.

Alchemilla pastoralis Buser. Origin—Teesdale, Durham.—A. J. WILMOTT. Hort. Reigate, May, 1927.—C. E. SALMON.

Alchemilla alpestris Schmidt. [Ref. No. Y.184.] Near Langdon Beck Inn, Upper Teesdale, Durham, July 1927.—J. E. LOUSLEY. "Yes, I agree with this determination."—SALMON.

Rosa canina L., var. *insignis* Déségl. & Rip. Cambridge Batch, Long Ashton, Bristol, N. Somerset, June 15 and October 3, 1927. Flowers pale pink.—I. M. ROPER. "These specimens are correctly named. There is a tendency in some of them to excessive biserration, but insufficient to refuse the name to them, though taken alone I might have referred them to the *Dumales*. But I see no reason to suppose that they may not all have come from the same bush, and the borderland between the two Groups is indefinable."—WOLLEY-DOD.

Rosa tomentella, var. *obtusifolia* Desf. Near Scotcher's Farm, Horsell Common, Surrey, September 1927. I believe this is correct *obtusifolia* although the leaves are none of them obtuse and very sparingly hairy on the upper surface.—W. BIDDISCOMBE. "All the specimens are correctly named and tolerably characteristic, but the name should be written either as *R. tomentella* Lem., var. *obtusifolia* Wolley-Dod, or as *R. canina*, var. *obtusifolia* Desv., who so wrote it after first describing it as *R. obtusifolia* as a species."—Wolley-Dod.

Sorbus rupicola Hedl. [Ref. No. Y.83.] Trees overhanging Tees at Winch Bridge, Teesdale, Durham, July 1927. Pointed out to me as good *rupicola* by Mr T. J. Foggitt.—J. E. Lousley.

Pyrus germanica (L.) Hook., forma. Hedges in the N.E. of the Island, where it is quite naturalised if not native, Rozel, Jersey, May 25, 1927.—Coll. Bro. Ariste; comm. L. Arsene. "Yes, the wild, and as Fr. Arsène says, it may be the native plant in Jersey."—Druce.

Saxifraga platypetala Sm. [Ref. No. Y.187.] Upper slopes of Mickle Fell, N.W. Yorkshire, alt. c. 2000 ft., July 1927.—J. E. Lousley.

Tillaea muscosa L. Sandy plains, rocky pathways or denudated places on heaths, Le Ouaisne, Jersey, April 30, 1926.—L. Arsene.

Sedum album L. Walls; not common, La Rosière, Jersey, June 15, 1927; coll. by Bro. Ariste. I do not see why this plant, which is frequent in Brittany and Normandy, should not be considered as native in Jersey.—L. Arsene. "Yes, I think (with Fr. Arsene) that it may be native in Jersey."—Druce.

Sedum hispanicum L., var. *minor* Praeger. Walls at Garford, Berks, July 1927.—G. C. Druce.

Peplis Portula L. Growing upright in deep water, Loch of Lintrathen, Forfar, July 1927.—R. & M. Corstorphine. "Var. *callitrichoides* A. Br., which appears to be no more than an elongated submerged state."—Britton. "I should refer this to var. *callitrichoides* A. Br. of my *List*, which is probably a state only. The analagous condition of var. *longidentata* proves so."—Druce.

Epilobium parviflorum Schreb., var. Ware, Herts, October 1927.—G. C. Druce.

Epilobium roseum Schreb. "The Cedars," Bordyke, Tonbridge, W. Kent, July 30, 1927.—J. E. Little. "Yes, one of them a very broad-leaved form."—Druce.

Epilobium anagallidifolium Lam. [Ref. No. Y.98.] Banks of upper reaches of Maize Beck, Teesdale, Westmorland, July 1927.—J. E. Lousley. "Yes, but I see no adequate reason for giving up the name *alpinum*. It certainly is Hudson's *alpinum* of the *Flora Anglica* 1762, and I do not think anyone has had the temerity to use *alpinum* in the sense of *lactiflorum*. The description in the *Species Plantarum* is admittedly bad, but Hudson brought *alpinum*, as a definite entity, into citation. Pedants may if they choose write *E. alpinum* L. em. Hudson, which is prior to Lamarck's name of *anagallidifolium*."—DRUCE.

Ludwigia palustris (L.) Elliot. Laprairie, Quebec, Canada, August 9, 1927. This rare English plant is, as far as I know, found in Jersey in but one locality near Grouville where it is far from being abundant. It is very common in the vicinity of Montreal, where I collected a number of specimens for the members of the Club.—L. ARSENE.

Bupleurum tenuissimum L. Medina Estuary, Cowes, September 1927.—J. W. LONG.

Heracleum Manegazzianum Somm. & Levier. Established on old tips, near Dagenham, Essex, August 4, 1927. Det. Dr THELLUNG. See *Rep. B.E.C.* 210, 1926, No. 1153. The thickets of this plant up to 12 feet high made an extraordinary sight.—R. MELVILLE. "The specific name requires a 't;' it is named after the Italian naturalist and ethnologist, Paulo Mantegazzi."—DRUCE.

Coriandrum sativum L. Waste ground, near Dagenham, Essex, September 7, 1927.—R. MELVILLE. "Yes."—DRUCE.

Daucus Carota L., forma. [Ref. No. P.P.1106.] Derrynane, Kerry, August 1927.—G. C. DRUCE.

Galium Mollugo L. [Ref. No. 2679.] Headley, Surrey, July 13, 1924. A large plant with long and narrow leaves which is to be referred to the restricted *G. Mollugo* Linn., as opposed to the plant with broader and shorter leaves, which is the *G. elatum* of Thuillier. The leaves are not sufficiently narrow for this plant to be the var. *angustifolium* Leers, nor, for the same reason, is it *G. dumetorum* Jord. It has not any obvious affinity with *G. erectum* Huds.—C. E. BRITTON.

Galium Mollugo L. [Ref. No. 3153.] Ashtead, Surrey, June 19, 1927. Identical with the Headley plant [Ref. No. 2679] and the same remarks apply here also.—C. E. BRITTON.

Galium Mollugo L. [Ref. No. 3180.] Ashtead, Surrey, July 2, 1927. I think the lower stem leaves are sufficiently elongated to place this plant within the limits of *G. Mollugo* L., and not to *G. elatum* Thuill. It is a form remarkable for the very hairy stems and leaves. The lower parts of stems are almost rough with hairs. It is the var. *pubescens* Schrader, and as the hairiness extends to the summit of the stems and to the bracts it comes under the sub-var. *pycnotrichum* H. Braun.—C. E. BRITTON.

Galium Mollugo L. [Ref. No. 3239.] Headley, Surrey, August 21, 1927.—C. E. BRITTON.

Galium Mollugo L. [Ref. No. 3260.] Near Leatherhead, Surrey, August 28, 1927. Ref. No. 3239 from Headley and Ref. No. 3260 from near Leatherhead are narrow-leaved, weak-panicled plants that belong to the *G. Mollugo* group rather than to *G. erectum*.—C. E. Britton.

Galium erectum Huds.? High Down, Herts, June 14 and 20, 1927. Plants growing in open ground amongst nettles, etc., in flower May 28, and nearly over and fruiting on June 14, when typical *G. Mollugo* had hardly begun to flower. The lower, non-flowering branches are divaricate, the upper ascending; the panicle somewhat strict; the leaves mostly intermediate between extreme *G. Mollugo* and extreme *G. erectum*. Flowers about 4 mm. in diameter. I sent this plant to Mr W. H. Pearsall who replied (June 4, 1927), "I should have no hesitation in putting it to *G. erectum*."—J. E. Little. "*Galium erectum*; one of the many forms of this plant."—Druce.

Asperula ciliata Roch. Near St Donat's, Glamorgan, June 1927.—G. C. Druce.

Kentranthus ruber DC. Albino. Hort. July 7, 1927; original, roadside near Llandudno, Carnarvonshire.—C. Waterfall. "Yes, a white-flowered form which is only a sport, since I introduced a plant to my garden from which among several normal seedlings one came with white flowers. The second, narrow-leaved form is not De Candolle's *angustifolius*, which has a spur which in length does not exceed the ovary. It is a native of Greece. See *Rep. B.E.C.* 307, 1927.—Druce.

Valerianella olitoria Poll. Hort. June 1927; origin Slapton Sands, S. Devon, May 1904.—C. Waterfall. "The type with glabrous fruits." —Druce.

Aster ? longifolius Lam. Yarnton, Oxon, September 1927.—G. C. Druce.

Filago sp. Garden weed, Bathford, Somerset, July 28, 1927. All the specimens sent came from a single luxuriant plant from a garden path. The wet summer was, no doubt, responsible for the luxuriance, but I cannot satisfy myself whether they should be named *F. germanica* L. forma or *F. spathulata* Presl.—L. V. Lester-Garland. "This is a very *apiculata* looking plant, but it lacks the red-tipped phyllaries, and the stem leaves are not narrowed at base. I think it must go under *germanica*."—Druce.

Inula crithmoides L. Corbiere, Jersey, July 1907.—G. C. Druce.

Ambrosia psilostachya DC. Barry, Glamorgan, August 1927.—G. C. Druce.

Achillea Millefolium L., var. *conspicua* Dr. Culham, Oxon, August 1927.—G. C. Druce.

Anthemis macrantha Heuff. Fishguard, Pembroke, August 1927.—G. C. **Druce.**

Matricaria inodora L., var. *maritima* L. Maritime sands and rocks, Bel Royal, Jersey, June 25, 1927; coll. by Bro. **Ariste.**—L. **Arsene.** "I should name this plant *Matricaria inodora* L., var. *salina* DC. The name var. *maritima* is, in my opinion, applicable to the northern form (or group of forms) which is found on the coasts of Scotland, the Orkneys, Norway, Lapland, etc., and never gets so far south as the Channel Islands. See my paper in *Journ. Bot.* 170 f.f. 1921."—**Lester-Garland.**

Artemisia annua L. Waste ground, Yiewsley, Middlesex, September 15, 1927.—R. **Melville.**

Artemisia biennis L. Gas Works Quay, Colchester, N. Essex, October 6, 1927.—G. C. **Brown.** "Yes, but the authority should be Willdenow."—**Druce.**

Senecio sylvaticus L., var. *auriculatus* Meyer = *S. viridus* Sm., non L. Peat Moors at Catcot-Burtle, N. Somerset, August 23, 1927.—J. W. **White.**

Senecio Cineraria DC. (= *Cineraria maritima* L.). St Aubin's, Jersey, June 18, 1927; coll. by Bro. **Ariste.** Introduced in some places near the sea, but has not spread much since it was discovered by Dr Druce in 1906.—L. **Arsene.** "Yes, it is likely to spread in Jersey."—**Druce.**

Centaurea Jacea L., forma. [Ref. No. 3171.] Malden, Surrey, June 26, 1927. Rayless. Best regarded, I think, as a form of the protean *C. Jacea* L., though it is likely that also it exhibits the influence of *C. nemoralis* Jord.—C. E. **Britton.**

Centaurea Jacea L., sub-sp. *C. jungens* Gugl., var. *fimbriatisquama* Gugl. [Ref. Nos. 3169 and 3174.]. Malden, Surrey, June 26, 1927.—C. E. **Britton.**

Centaurea jungens Gugl., var. *fimbriatisquama* Gugl. Sandy places and dry fields, rare; Don Bridge, Jersey, July 10, 1927; coll. by Bro. **Ariste.**—L. **Arsene.** "A very interesting series of plants that it is difficult to believe do not represent phases of the same form. At one end are the plants with the phyllary-appendages mostly regularly pectinate, which cannot be separated from *C. pratensis* Thuill., and, at the other end, are the plants which seem much nearer to *C. Jacea* L. by reason of the appendages (with the exception of the outermost) being, at the most, fissured, lacerate, or fimbriate, but not pectinate. It is only these last plants that can, I think, be named *C. Jacea* L., sub-sp. *C. jungens* Gugl., var. *fimbriatisquama*. I have indicated which specimens should bear the latter name, and which, in my opinion, are *C. pratensis*. Similar associated plants have come to my knowledge from other localities."—Britton.

Centaurea Jacea L., sub-sp. *angustifolia* Gugl. [Ref. No. 3192.]. Malden, Surrey, June 26, 1927. Similar to other plants to which I have applied this name from other English localities.—C. E. Britton.

Centaurea ——. [Ref. No. Y.166.] Laneside near Field Farm, Burghfield, Berks, August 1, 1927. This appears to be by far the commonest form in this district and has rayed flowers.—J. E. Lousley. "These plants are best referred to *C. Drucei*, f. *radiata*, but are not characteristic, and differ in the more crowded appendages. The branching of the stems, character of the rameal leaves, capituli, and shape of the appendages, all point to *C. Drucei*."—Britton.

Centaurea ——. [Ref. No. 3218.] Merton, Surrey, July 24, 1927. This suggests the combined influence of *C. Jacea* and *C. nemoralis*, although it may be more than a mutant of the latter. No *C. Jacea* was observed close at hand, the nearest known locality where the latter grows being about half a mile away.—C. E. Britton.

Centaurea ——. [Ref. No. 3195.] Malden, Surrey, July 6, 1927. A very critical plant. The appendages are bullate as in many forms of *C. Jacea*, but are somewhat fimbriate. As it grew with various forms of *C. Jacea*, and also with *C. nemoralis*, the possibility of it being of hybrid origin is not to be lost sight of.—C. E. Britton.

Centaurea ——. [Ref. No. 737.] Foulden Common, Norfolk, September 13, 1927. The phyllary appendages are brown.—J. E. Little. "All plants contributed are, I believe, immature individuals of *C. nemoralis* Jord., var. *subintegra*."—Britton.

Centaurea ——. Crowell, Oxon, September 1927.—G. C. Druce. "A handsome rayed form of *C. nemoralis* Jord., var. *subintegra*. Some few specimens show spreading lower phyllary-appendages and so approach var. *microptilon*, but the character in question is not sufficiently marked for the plants to be rightfully referred to the latter variety." —Britton.

Centaurea nemoralis Jord., forma. [Ref. No. P.P.1112.] Kingston, Berks, August 1927.—G. C. Druce. "Another very pretty form that I can only regard as a radiate var. *subintegra*."—Britton.

Centaurea nemoralis Jord., var. *microptilon* C. E. B. [Ref. No. 3246.] Ashtead, Surrey, August 21, 1927.—C. E. Britton.

Centaurea nemoralis Jord. [var. *microptilon* C. E. B.] [Ref. No. [illegible]71.] By Cedars Road, Mitcham Common, Surrey, August 20, 1927.

J. E. **Lousley**. "I am afraid that these plants cannot be placed under var. *microptilon*, as the phyllary appendages are not sufficiently elongated, nor are they conspicuously arcuate-spreading, even in the undeveloped capituli. The set contributed excellently illustrates what I ventured to describe as var. *subintegra*."—**Britton**.

Centaurea Solstitialis L. Waste ground near Rainham, Essex, September 2, 1927.—R. **Melville**. "Yes, nice specimens."—**Druce**.

Centaurea algeriensis Coss. & Dur. Splott, Cardiff, June 1927. A very showy and distinct plant. Introduced with grain refuse.—R. L. **Smith**.

Picris Hieracioides L., var. *arvalis* (Jord.). Sandy fields and banks, Pont Marquet, Jersey, July 10, 1927; coll. by Bro. **Ariste**.—L. **Arsene**. "Yes, good examples; Jordan's species *arvalis* seems to be var. *umbellata* Schultz, which is more correct, since it is based on *Leontodon umbellatum* Schrank, which is earlier than Jordan's *P. arvalis*. See *Rouy Fl. Fr.* 23."—**Druce**.

Crepis capillaris Wallr. Merton, Oxford, August 1927. Sent because the type is uncommon.—G. C. **Druce**.

Hieracium Peleterianum Mérat. St Aubin's, Jersey, April 29, 1927; coll. Bro. **Ariste**.—L. **Arsene**.

Hieracium stoloniferum W. & K. Hanslope, Berks, July 1927.—G. C. **Druce**.

Hieracium praecox Sch.-Bip. Railway Bank near Chipstead, Surrey, July 1927.—G. C. **Druce**. "In the 'Hieracia of the London Catalogue,' 315-322, 1925 (*Journ. Bot.*), the late Rev. Roffey identifies this Chipstead plant with var. *castanetorum* Schultz-Bipontinus, *Cichoraceotheca* No. 22. But as Mr Pugsley points out (*Watson B.E.C. Rep.* 386, 1926-7) this is apparently a nomen nudum."—**Lousley**.

Hieracium Sommerfeltii Lindeb. ? [Ref. No. 4.] Cliffs of Moel Sych, Berwyn Mountains, at 2400 feet, Denbighshire, July 16, 1927.—A. **Wilson**.

Hieracium deductum Sudre. Parkhurst, Lurgashall, W. Sussex, June 6, 1927.—R. J. **Burdon**. "Zahn uses *H. Jaccardii* Zahn for this since it is four years earlier than Sudre's name which Zahn adopts for his var. a. I have the same plant from Russell's Water, Oxon."—**Druce**.

Hieracium amplexicaule L. Nottingham Castle Rocks, August 29, 1927.—R. **Bulley**. "This Nottingham Hawkweed is *H. Pulmonarioides* Vill."—**Druce**.

Hieracium umbellatum L., var. *littorale* Lindb. Cliffs and hillsides near the sea, Jersey. (a) Form with narrow leaves, sometimes linear;

very variable in the locality where I collected it; Gros-Nez, July 15, 1926. (b) Form with leaves remarkably broad, a delicate plant; Crabbé, July 15, 1926. (c) A more vigorous plant than forms (a) and (b); the most common form of the variety; Plémont, July 15, 1926.—L. **Arsene.**

Taraxacum vulgare Schrank, var. [Ref. No. 333.] Under wall, Westbury-on-Trym, W. Gloster, May 5, 1927.—I. M. **Roper.**

Taraxacum vulgare Schrank, var. [Ref. No. 334.] Made ground, Avonmouth, W. Gloster, April 28, 1927.—I. M. **Roper.**

Taraxacum cyanolepis Dahlst. Ivinghoe, Bucks, May 1925.—G. C. **Druce.**

Taraxacum longisquameum Dahlst. Chadlington, Oxon, May 1927. —G. C. **Druce.**

Taraxacum ——. Blackdown, Sussex, May 18, 1927.—R. J. **Burdon.**

Sonchus palustris L. Bank of River Medway near Aylesford, Kent, August 1925. The luxuriance of this plant in this locality is not appreciably affected by a most interesting uredine, *Puccinia Sonchi* Rob., which attacks it, and of which rare fungus this rare species is, so far as is known, an unrecorded host plant.—C. V. B. **Marquand.**

Lobelia urens L. Near Hinton, S. Hants, August 1927.—G. C. **Druce.**

Jasione montana L., var. *major* Mert. & Koch. L'Etac, Jersey, June 15, 1926.—L. **Arsene.** "The specimens of this which I have received do not show the general habit of the plant very well, but they appear to belong to var. *latifolia* Pugsley. True *major* is a very rare plant in this country, and has cauline leaves only about 4 mm. broad and ciliate or sparingly pilose. *Latifolia*, on the other hand, differs 'by being of lower stature though equally robust, and in having broader, thicker, and more pilose foliage, and flatter heads of more shortly pedicelled flowers subtended by much larger and broader bracts.' In the past it has commonly been identified with *major*. See Mr Pugsley on 'British Forms of *Jasione montana* L.' in *Journ. Bot.*, August 1921."—**Lousley.**

Jasione montana L., var. *littoralis* Fr. Sand dunes, Studland Bay, Dorset, June 23, 1926.—L. B. **Hall.**

Erica cinerea L., forma. [Ref. No. 703.] Parkstone, Dorset, August 31 and October 5, 1927. A form in which all the flowers are replaced by compact ovoid heads of bracts of a rather bright crimson tint. All the specimens are from the same plant. See *Journ. Bot.* 437, 1909.—L. B. **Hall.** "See also *Journ. Bot.* 25, January 1928, where Mr Hall describes this plant under the name var. *Rendlei*, var. nov."—**Rilstone.**

Erica Tetralix L. Silverwell Moor, W. Cornwall, August 1927. Two forms: one with leaves ciliate with glandular hairs, the other with leaves not ciliate.—F. Rilstone. "Mr Rilstone sends two forms, one with leaves ciliate, which is the usual form; the other in which they are absent, sub-var. *eciliata*."—Druce.

Erica ciliaris L. Silverwell Moor, W. Cornwall, August 1927.—F. Rilstone.

×*Erica Watsoni* Benth. Silverwell Moor, W. Cornwall, August 1927. Three forms—(b) approaching *E. ciliaris*, with leaves ciliate with glandular hairs; (c) approaching *E. Tetralix*, with leaves similarly gland-ciliate; and (d) with leaves ciliate with glandless hairs. Silverwell Moor is in St Agnes Parish.—F. Rilstone.

Limonium reticulatum Mill. Hunstanton, Norfolk, September 8, 1927.—R. Bulley. "Correct, and neat specimens."—Druce. "Good examples of *L. bellidifolium* Dum., carefully prepared. Reasons for not adopting the name *L. reticulatum* Mill. may be found in *Journ. Bot.* 429, 1907."—Salmon.

Trientalis europaea L. Pine forest near Carr Bridge, Easterness. June 1924.—C. V. B. Marquand.

Glaux maritima L. Le Sauchet, Jersey, June 10, 1927; coll. by Bro. Ariste. In the *Flora of Jersey* the plant is said to be very rare and on the way to extinction, but it is found in many places at the base of cliffs —Corbiere, St Catherine's Bay, Le Couperon, Les Rouaux, le Douet de la Mer, etc.—L. Arsene.

Blackstonia perfoliata Huds. Thrumpton, Notts, August 27, 1927. —R. Bulley.

Centaurium Centaurium (L.) Dr., var. Coast Dunes, Altcar, S.W. Lancs.—G. C. Druce. "I should be interested to know if any other species grew within range of this gathering? It varies considerably in habit, etc. Some examples appear to come under var. *conferta*, others are not unlike var. *sublitoralis*. I should like to see fresh specimens, with the root leaves, gathered a little earlier in the year.—Salmon.

Centaurium tenuiflorum (H. & L.). Marshy ground near Newport, Isle of Wight, September 1927.—J. W. Long. "*Erythraea tenuiflora* Hoff. & Link. Fine examples of this distinct-looking plant."—Salmon. "The generic name, *Erythraea*, is antedated by *Centaurium*."—Druce.

Gentiana septentrionalis Dr. Spiggie, Zetland, July 1925.—G. C. Druce.

Gentiana germanica Willd. Crowell, Oxon, September 1927.—G. C. Druce.

Cynoglossum germanicum Jacq. Pyrton, Oxon. July 1927.—G. C. Druce.

×*Symphytum caeruleum* Petitmengin. See Bucknall in *Journ. Bot.* 335, 1912. Obtained from Germany about 1885 by Prof. Leipner, and since cultivated from the original root in the garden of Bristol University. The decurrent leaf-blades that wing the stem from node to node mark the parentage of *S. officinale*, while the stature, general asperity, and colour of the flowers indicate hybridity with *S. peregrinum*. The plant attains a height of six feet when April and May pass without much rain; in wet seasons a foot less is the average. Apparently only known in cultivation. Garden of Bristol University, June 1927.—J. W. White.

Myosotis versicolor Sm., var. *Lloydii* Corbière. [Ref. No. 3120.] Banstead, Surrey, May 22, 1927. Characterised by pale yellow flowers becoming pale blue without further change.—C. E. Britton.

?*Solanum atriplicifolium*. Alien on banana refuse from ships in Avonmouth Docks, West Gloucester, September 1926. This must be a rare introduction as I have never met with it at any other time. The name has been suggested and I would be glad to know if it can be substantiated.—J. W. White. "This is *Solanum sarrachoides* Sendtn."—R. Melville.

Solanum sarrachoides Sendtn. Waste ground, near Dagenham, Essex, October 2, 1927. Native of Central America. Det. Dr Thellung. See *Rep. B.E.C.* 211, 1926, No. 1850. Very similar in appearance to *S. nigrum*, but differs in its lighter coloured glandular foliage and in having the calyx segments exceeding the berry.—R. Melville.

Physalis pubescens L. Waste ground near Yiewsley, Middlesex, September 15, 1927. -R. Melville. Later—"This has been determined as *P. peruviana* L. by Mr N. Sandwith."—Melville.

Linaria Linaria (L.) Karst × *L. repens* (L.) Mill. Didcot, Berks, August 1927.—G. C. Druce.

Linaria vulgaris Mill ("appr. var. *pulchella*" Druce). Hunstanton, Norfolk, September 8, 1927.—R. Bulley.

Linaria Cymbalaria Mill., var. *pallidior* (Rouy). Trap rocks, Broughty Ferry, v.-c. 90, July 1927.—R. & M. Corstorphine. "Rouy describes this as a sub-var. It seems constant in culture."—Druce.

Veronica agrestis L. Garden ground, "Highfield," Luton, Beds, November 18 and December 15, 1926; coll. J. E. Little and M. Brown. —J. E. Little. "Yes, *agrestis*; rather stout and large leaved."—Drabble. "The keel of the capsule is strongly glandular-ciliate, the lateral surfaces are also glandular-hairy, but without curled hairs. These features place it to var. *Garkiana* P. Fournier."—Britton.

Veronica serpyllifolia L. Field, Avonmouth, W. Gloster, May 10, 1927. In its procumbent and much rooted growth it imitates the alpine var. *humifusa*. Its capsules also are covered with gland-tipped hairs, and not confined to the apex. The flowers are those of the type and the many hairs on the bracts and pedicels are jointed but not glandular.—I. M. ROPER. "A common 'humifuse' rooting state of ordinary *serpyllifolia*."—DRABBLE.

Euphrasia [*borealis* Towns.]. [Ref. No. Y.179.] Pasture by the Langdon Beck and Harwood Beck Junction, Upper Teesdale, Durham, July 3, 1927.—J. E. LOUSLEY. "No, not *borealis*; I think we must call it *brevipila*, var. *subeglandulosa*."—DRABBLE. "These plants are very young, but the exceptional thinness of the texture of the foliage is quite against *E. borealis*, and I should refer them to *E. brevipila*, var. *subeglandulosa* Towns."—PEARSALL.

Euphrasia [*brevipila* Burn. & Gremli, var. *subeglandulosa* Towns.]. Dry places, common among grass on sandy plains and dunes, Le Quennevais, Jersey, June 21, 1926. L. ARSENE. "*E. nemorosa*, var. *ciliata* Drabble."—PEARSALL. "No, not *brevipila*; this is *nemorosa*, var. *ciliata*, small and mostly unbranched."—DRABBLE.

Euphrasia [*curta* Fr., var. *piccola* Towns.]. Sphagnum bog at northern end of Falcon Clints, Widdy Bank Fell, Durham, July 1927.—J. E. LOUSLEY. "Although these plants have very strong marginal setae, the leaf-surfaces have relatively little clothing. They are certainly not densely hairy as are those of the var. *piccola*. The plants are also much too large (7-8 cm.) for that variety. Authentic specimens in my herbarium are only 2-3 cm. I should refer them to *E. scotica*, and find they greatly resemble plants from Teesdale so named by the late C. Bucknall."—PEARSALL. "Not *curta*; I think it is *scotica*."—DRABBLE.

Euphrasia Rostkoviana Hayne. In mowing grass, Pendery, Co. Brecon, August 17, 1927.—I. M. ROPER. "Yes, *E. Rostkoviana*, but very variable. (a) Some spikes very robust, with densely imbricated bracts, showing relatively few glandular hairs but stems abundantly clothed with these; (b) others with very slender spikes showing long internodes and no imbrication. These examples are less glandular than (a)."—PEARSALL. "Yes, *Rostkoviana*."—DRABBLE.

Euphrasia Rostkoviana Hayne. Field, Penycae, Breconshire, July 1927; coll. A. E. WADE.—NAT. MUSEUM OF WALES. "Densely glandular on stem and foliage, hairs 5-6 cells long, plus gland., *E. Rostkoviana*."—PEARSALL. "Yes, *Rostkoviana*."—DRABBLE.

Euphrasia Kerneri Wettst. Crowell, Oxon, September 1927.—G. C. DRUCE. "Excellent *Kerneri*."—DRABBLE. "Yes, the usually brilliantly-coloured form of dry, chalky habitats."—PEARSALL.

Bartsia viscosa L. Damp places, Pont-Marquet, Jersey, July 15, 1926.—L. **Arsene.**

Melampyrum pratense L., var. [Ref. No. Y.167.] Roadside near Leith Hill, Surrey, August 21, 1927. With entire bracts and pale lemon coloured flowers. I preserved this by means of the method advocated by E. Van den Broeck in *Bulletin du Jardin d'Agrement* 55-61, April 4, 1926, entailing the use of " papier de soie." Almost all the flowers and leaves have completely kept their natural colour, and the method seems to possess considerable advantages in the preservation of herbarium specimens of this group. It remains to be seen to what degree these colours will be lost in the course of time. I will gladly supply particulars if required.—J. E. **Lousley.**

Melampyrum pratense L., var. *laurifolium* Beauv., f., p.p. 1124. Compton, Berks, July 1927.—G. C. **Druce.**

Orobanche purpurea Jacq. Near Tenby, S. Wales, June 23, 1926; coll. E. **Arnett.**—**Nat. Museum of Wales.** " Yes, very nice examples." —**Salmon.**

Mentha alopecuroides Hull. Clipstone, Notts, August 27, 1927.—R. **Bulley.** " Yes, *M. alopecuroides* Hull. It is considered one of the numerous primary and secondary hybrids between *M. longifolia* and *rotundifolia*, and is described under the name ×*M. niliaca* Jacq., var. *alopecuroides* (Hull) Briquet in *Rep. B.E.C.* 220, 1926."—**Fraser.**

Mentha longifolia Huds. (*M. silvestris* L.). Marsh by a stream near Clevedon, N. Somerset, August 31, 1927.—J. W. **White.** " Some of the leaves are broad for the type, but they have good length and the slender spikes are typical enough."—**Fraser.**

Mentha niliaca Jacq. [var. *nemorosa* (Willd.)]. Yarnton, Oxon, August 1927.—G. C. **Druce.** " This matches a sheet exactly which was gathered at Abingdon, Berks, by the same collector in 1926, and which I have described as typical ×*M. niliaca* Jacq. in ' Menthae Britannicae ;' see *Rep. B.E.C.* 1926, Supp. p. 216. The leaves of the main axis are longer, and more gradually acuminate than in var. *nemorosa* (Willd.). The spikes are cylindrical, slender and continuous throughout, whereas those of var. *nemorosa* are more or less interrupted at the base, stouter and longer in specimens of similar vigour."—**Fraser.**

Mentha [*citrata* Ehrh.]. [Ref. No. Y.164.] In considerable quantity in a field at Little Briton Hill, Sanderstead, Surrey, September 4, 1927.—J. E. **Lousley.** " This is *M. piperita* L., var. *subcordata* Fraser. The leaves are rounded or emarginate at the base, and would have been subcordate at the base in more vigorous specimens. It is a mint that is liable to be mistaken for *M. citrata* Ehrh. owing to its glabrous character, except for the calyx teeth. It can be distinguished, however, by its acuminate leaves, even if growing in running water when they are large, or by their length in proportion to their breadth. The leaves of *M. citrata* are always broad and rounded at the end or have a small point. The variety is a rare plant in Surrey."—FRASER.

Mentha aquatica L., type. Cothill, Berks, September 1927.—G. C. DRUCE. "The best representative of the species in the Linnean Herbarium with *M. hirsuta* Huds., *M. aquatica* L., var. *minor* Sole, and *M. aquatica* L., var. *capitata* Briq., as synonyms."—FRASER.

Mentha [*aquatica* L.], var. *congesta* Fraser. [Ref. No. Y.170.] Laneside near Hedge Court Pond, S.E. Surrey, August 28, 1927; leg. J. E. L. and C. E. WALLACE. Note.—In these plants the inflorescence can in most cases by no means be said to hide the bracts, but I notice that this character is somewhat variable.—J. E. LOUSLEY. "No doubt the name given above was a mere oversight for × *M. verticillata* L., var. *congesta* Fraser. All the specimens I have seen of this variety previous to 1894, by various collectors, had very congested or crowded inflorescences, and various names were given them. In 1921 I collected the most congested specimens I had seen, only two or three verticels showing amongst the bracts. Roots I cultivated developed six to nine verticels, more widely apart, but all at the apex of the stem and branches. Collected from a hedge to the north of Newdigate, I have a sheet that exactly matches the specimens now being distributed. It always occurs on dry soils in Surrey, but only in a few stations have the flowers hidden the bracts. The long oval or elliptic leaves are the same in all well-developed specimens, and the variations are due to soil, degree of moisture and shade or exposure."—FRASER.

Mentha hircina (Hull) Fraser, var. *hirsuta* Fraser (*aquatica* × *longifolia*). The Dour, New Aberdour, North Aberdeen, September 17 and 20. All the modern collections of ×*M. hircina* I have seen are far too hairy for Hull's plant and I have named it the var. *hirsuta*, meaning hirsute, but the underside of the leaves is more or less tomentose. The gathering made on the 17th had been borne down and sanded by the Dour in flood, those collected on the 20th were from another station on the same stream.—J. FRASER.

×*Mentha verticillata* L., var. *ovalifolia* H. Braun. Wytham, Berks, August 1927.—G. C. DRUCE. "A branched state of the variety, but it can even be excessively branched, with much longer branches than these specimens, and smaller leaves. That state I have proved by cultivation to be inconstant. In a wet season, in the wild state, it may be excessively branched, with quite small leaves on the ultimate branches; while the same colony may be greatly reduced in a dry season and quite different in appearance."—J. FRASER.

×*Mentha verticillata* L., var. *rivalis* Briq. Berehaven, Co. Cork, August 1927.—G. C. Druce. "A subspicate state of the plant rather than a permanent form, and is likely to occur in any variety when the growth for the season is played out, but particularly in dry seasons and dry situations."—Fraser.

×*Mentha gentilis* L., var. *cardiaca* (Baker) Briq. (*arvensis* × *gentilis*). In a meadow, Woking, Surrey, August 23, 1925, and August 15, 1926. The first gathering was more or less trodden down by horses; the second gathering shows the graceful habit of the plant. This ancient hybrid was figured in Johnson's edition of John Gerard's *Herbal*, 680, No. 4, which was even then named *Mentha cardiaca* or Heart Mint. It was also known to the Italians and Germans in those days (1633). The first four Mints were grown in gardens everywhere.—J. Fraser.

Mentha rubra Sm., var. *raripila* Briq. [Ref. No. 3274.] West End, Esher, Surrey, September 18, 1927.—C. E. Britton. "I agree. I collected it there in 1916, and the leaves are now much smaller than then, owing, doubtless, to the hard clay bottom of the ponds."—Fraser.

Mentha arvensis L. [var.]. [Ref. No. Y.168.] Forge Wood, Worth, Sussex, August 8, 1927; leg. J. E. L. and E. C. Wallace.—J. E. Lousley. "A small state of the typical *M. arvensis* L. The leaves are elliptic, more or less densely hairy on both surfaces. The calyx teeth are triangular with rather long, sharp or slightly acuminate points, and the pedicels are glabrous or subglabrous."—Fraser.

Mentha arvensis L. P.P. 1011. Ambrosden, Oxon, August 1927. —G. C. Druce. "The leaves are rather less hairy than usual, but hairs are liable to be deficient in shade and in water. The calyx teeth are typical for the species. The pedicels are rather densely hairy, which makes it what I call *M. arvensis* L., forma *hirtipes* Fraser, because the specimen of Linnaeus has glabrous pedicels."—Fraser.

Stachys alpina L. [Ref. No. 2.] Edge of thicket on limestone at about 800 feet near Cerrig-y-Druidion, Denbighshire, August 1, 1927. —A. Wilson. "A splendid New County Record on which we heartily congratulate Mr Wilson."—Druce.

Galeopsis Tetrahit L., forma. [Ref. No. 3242.] Ermyn Street, near Leatherhead, Surrey, August 21, 1927. This has the dark purple calyx of var. *nigrescens* Bréb., but that is a name scarcely worthy of keeping up, as the character does not come true from seed. The plant distributed is best named var. *arvensis* Schlecht. I don't know whether Dr Druce extends beyond the boundaries of the county of Oxford the observations on *G. Tetrahit* published in the *Flora of Oxfordshire*, ed. 2. That this species is variable is readily agreed to, but its delimitation into two forms, one being *G. bifida* Boenn. (I follow those Continental botanists who give this specific rank), the other var. *sylvestris* Schlecht., seems to depart widely from the views of those botanists who have specially studied the forms of this species, and arrange restricted *G. Tetrahit* under two vars., *arvensis* and *sylvestris* of Schlecht., admitting that these grade into each other. As far as I have observed, the usual plant of copses and hedges is not var. *sylvestris*, but var. *arvensis*, which, beside other characters, has a leaf-blade rounded or only slightly contracted at the base, whereas var. *sylvestris* has a rather long-drawn-out base to the lamina. Var. *arvensis* is the common form, but var. *sylvestris* appears much rarer. There are well-marked plants to be referred to this in the British Herbarium at South Kensington, from Astley, Worcs.; Moston, Flint; Maresfield, E. Sussex; Ulverston, Lancs; Tunbridge Wells, W. Kent; Merioneth, etc.—C. E. **Britton**. "This comes under the so-called variety *nigrescens* Bréb., though the colour of the calyx is more purple and less blackish than in the Derbyshire plants with which I am familiar. Var. *nigrescens* is, however, a mere colour form."—**Drabble.**

Lamium purpureum L., var. *exannulatum* Loret et Barr. Allotment ground, Westbury-on-Trym, W. Gloster, March 14, 1927. Rouy describes the variety "Tube de la corolle dépourvu d'anneau de poils." Examination of a large number of florets shows that although the tube is sparsely hairy there is no definite ring of hairs at the base. The plants were intermixed with type and the white flowered form.—I. M. **Roper.** "The tube of the corolla seems to be without a ring of hairs, so I suppose we may call it var. *exannulatum* Loret et Barr."—**Drabble.**

Ballota nigra L., var. *mollissima* Dr. Kenfig, Glamorgan, August 1927.—G. C. **Druce.**

Ajuga reptans L., var. *stoloniflora* Bogenh. [Ref. No. 3112.] Ashtead, Surrey, May 5, 1927. A form in which the scions develop terminal inflorescences in the same season as they are produced.—C. E. **Britton.**

Ajuga pyramidalis × *reptans*. Origin, Burren, Co. Clare; Hort. Ox. 1927.—G. C. **Druce.**

Illecebrum verticillatum L. Origin, New Forest, Hants, September 14, 1925. Grown at Parkstone, Dorset; gathered September 20, 1927. These plants were grown in uncultivated ground, consisting of almost pure sand under partial shade of pine trees. Each plant formed a dense circular mat, the largest being 33 inches in diameter. I have previously sent a few small specimens from the New Forest locality, but think that these well-grown specimens of complete plants may be acceptable, particularly as they do not diminish the plant in any wild locality. —L. B. **Hall.** "Delightful specimens."—**Druce.**

Scleranthus perennis L. Fano, Denmark, July 1925.—G. C. **Druce.**

Amaranthus albus L. Waste ground, Rainham, S. Essex, October 8, 1927; coll. J. E. **Cooper.**—G. C. **Brown.**

Chenopodium album L., var. Waste ground, Electric Power Station, Colchester, August 28, 1927. A tall slender form of the *album* group which I am unable to match. The cusps of the leaves suggest the influence of *opulifolium*.—G. C. **Brown.**

Chenopodium [*album* L., var.]. Weed at Parkhurst, Lurgashall, W. Sussex, August 4, 1927.—R. J. **Burdon.** "*C. ficifolium* Sm."—**Drabble, Little** and **Melville.**

Chenopodium subficifolium Murr, f. *microphyllum* Murr. Didcot, Berks, September 1927.—G. C. **Druce.**

Chenopodium ficifolium (Sm.). Rubbish heap, Iver, Bucks, October 22, 1927.—I. A. **Williams.**

Axyris Amarantoides L. Bathford, Somerset, September 1, 1927. In a disused poultry run, with other casuals. Native in central and northern Asia, extending into Russia in Europe.—L. V. **Lester-Garland.**

Polygonum petecticale (Stokes) Dr. Didcot, Berks, August 1927.—G. C. **Druce.**

Polygonum maculatum Trim. & Dyer. [Ref. No. 732.] Wretton Fen, W. Norfolk, September 22, 1927. Fl. white, turning dingy red. Perianth sparingly glandular. Upon soil dredged from the bed of the River Wissey and thrown out along the bank, thus creating a new area of open ground, there sprang up in the 2nd and 3rd years an immense profusion of *Polygonum*, *Rumex* and other marsh plants, which give place after about the 4th year to thistles and coarse grasses. The most abundant form of *P. maculatum* was that with dingy red flowers and ± spreading decumbent habit. From these the present plants differed in having an erect central stem, very stout at the base, flanked by many spreading lateral branches, and flowers pure white at first but afterwards turning dingy red. Both forms were much thickened at the joints, up to 20 cm. in diameter, and had the same long somewhat drooping racemes of flowers. Plants having the erect habit were relatively scarce, and I could only count about six plants among many hundreds of the more usual form. Under the collective species *P. Persicaria* Ascherson & Graebner (*Fl. des N.O. Deutschen Flachlandes*, 279) group the following:—*P. tomentosum* Schrank, *P. nodosum* Persoon, *P. Persicaria* L. (restr.). The first two correspond respectively to *P. lapathifolium* L. and *P. laxum* Reichb. of Babington (*Manual*, 1856 edn.). Ascherson and Graebner (*l.c.*) remark:—"These three species, only slightly differing from one another, often appear not markedly distinct. There are frequently to be found between them (hybrid ?) intermediates. We possess a very instructive collection of such forms from Stettin, communicated by H. Möllendorf." The present plants differ from *P. laxum* Babington (*l.c.*) and from *P. maculatum* Trimen and Dyer of Groves' Bab. (Edn. 1904) in the close ochreae, and in the very sparing glandular clothing. In their smaller fruits (which, however, are also biconcave), they differ from *P. lapathifolium* (L.) Bab. From the plano-convex form of the two-styled fruits of *P. Persicaria* (L.) Bab. they are also clearly distinct. To sum up, the form and size of the achene appears to be a more constant character than the closeness or looseness of the ochreae, or the amount of glandular clothing.—J. E. **Little**. "I have elsewhere shown that (1) Trimen and Dyer rejected the trivial *nodosum* for this plant, (2) that they established *maculatum* as a sub-species only, and (3) that the earliest certain trivial is *petecticale* Stokes in Withering's *Natural Arrangement of British Plants*, which dates from 1787. There Stokes aptly names it, and his description is unequivocal."—**Druce**.

Polygonum mite Schrank. Wytham, Berks, August 1927.—G. C. **Druce**.

P. minus Huds. Adel Dam near Leeds, W. Yorks, September 10, 1927. Flowers white.—W. A. **Sledge**.

Rumex glomeratus Schreb., sub-var. *divaricatus* Moss. Border of field, Redland, Bristol, W. Gloster, July 31, 1927.—I. M. **Roper**. "It is extraordinary how an error once made persists. Most of us, I am afraid, are content to copy and ignore Routh's advice to check references. In *Rep. B.E.C.* 32, 1914, I showed that the replacement of *R. conglomeratus* by this name could not be maintained. It seems to have been made by a mis-reading of the date as 1790 on the title page of Murray's *Prodromus*. It is really 1770, and therefore one year earlier than Schreber's *glomeratus*. This led to the wrong naming of four hybrids and the sub-variety in the *Cambridge Flora*. The earliest varietal name seems to be that of Wallroth's var. *pycnocarpus* (*Sched. Crit.* 157, 1822) and this it would seem should be used, since *divaricatus* Thuill., on which Bluff and Fingerhuth based their variety, is not the *divaricatus* of Linnaeus. Whether it is worth separation is a matter of doubt."—**Druce**.

Rumex salicifolius Weinm. Didcot, Berks, September 1927.—G. C. **Druce**.

Rumex Patientia L. [Ref. No. 723.] Near Gas Works, Hitchin, Herts, June 4 and July 9, 1927. See *Rep. B.E.C.* 745, 1922.—J. E. **Little**.

Thesium humifusum DC. Sandy places and dry fields, rare, Le Quennevais, Jersey, July 15, 1926.—L. **Arsene**.

Euphorbia platyphyllos L. Hort. Oxford, September 1927.—G. C. **Druce**.

Euphorbia virgata Waldst. & Kit. L.N.E. Railway Embankment, Colchester, N. Essex, May 29, 1927.—G. C. **Brown**.

Euphorbia ceratocarpa Ten. Barry Dock, Glamorgan, October 1927. These specimens were taken from one large plant that is getting bigger every year. This plant was also in full flower last May.—R. L. **Smith.**

Ulmus nitens Moench, var. *Hunnybuni* Moss. Durley Hill, Keynsham, N. Somerset, May 14, 1927. Leaves and fruit seem to agree with the illustration in the *Cambridge Flora*, and the growth of the tree corresponds to the description.—I. M. Roper. "It seems clear that *nitens* is antedated by *carpinifolius* of Borckh., which is not identical with Lindley's *carpinifolius* of a later date."—**Druce.**

Humulus Lupulus L. Between Kent's Bank and Humphrey Head, N. Lancashire, September 9, 1927.—C. **Waterfall.**

Salix viminalis L., var. *linearifolia* Wimm. Marsh, Manningford Bruce, N. Wilts, June 6, 1927.—I. M. Roper. "A very good example of what is known as *S. viminalis* L., var. *linearifolia* Wimmer et Grab. I have been trying to assure myself whether or not it is a distinct variety, or merely an old or impoverished state of the species. There are many old bushes in Surrey that produce narrow leaves on the top, but develop leaves of the normal width low down."—**Fraser.**

Salix caprea × *viminalis* (= *mollissima* Sm.), f. *rugosa* (Leefe) ♀. Lane, Ursleigh Hill, Pensford, N. Somerset, March 30, June 22, 1927.—I. M. Roper. "I agree with the name. The leaves are shorter and broader, and the tomentum of the under surface more bluish or less grey than those of *S. caprea* × *viminalis* in the ♂ and ♀ in my experience. The margin of the leaves is also more or less distinctly crenate."—J. **Fraser.**

Salix aurita × *caprea* ♂. [Ref. No. 669.] Lilley Bottom, Herts, March 14 and July 24, 1926.—J. E. Little. "The dominant partner in the hybrid is *S. caprea*, judged by the size of some of the leaves, a few large crenatures upon them and the larger size of the catkins. The *S. aurita* parent is shown by the numerous small crenatures and serratures on the upper half of the leaves, the more scanty pubescence, the obtuse character of most of the bracteoles of the catkins, and the stipules sent separately."—**Fraser.**

Salix aurita × *cinerea*. [Ref. No. 572.] West Mill, Hitchin, Herts; leaves, September 15, 1923, and October 3, 1927; flowers, April 18, 1924, and March 26, 1927.—J. E. Little. "I agree with this name, having some specimens of a similar type though not quite so large. The evidence of *S. aurita* consists in most of the leaves being obovate, in the rugosity of the younger leaves, the density of the reticulation beneath, and the copious pubescence even in the middle of September. The stipules are right, and the slender catkins densely set with small ovaries and very short styles all indicate *S. aurita*. The other parent is indicated by the large leaves and stout twigs."—J. **Fraser.**

Salix cinerea L., forma. Shellingford, Berks, July 1927.—G. C. **Druce**. "A form of *S. cinerea* with very long styles for this species, and which is not very common, though apparently widely spread."—**Fraser.**

Salix cinerea × *viminalis* ♂. [Ref. No. 539.] (*S. caprea* × *cinerea* × *viminalis* E. F. L. ? W. E. C. R. 265, 1923). Swamp by River Hiz, Hitchin, Herts, April 5, 1923, and March 15, 1927, October 4, 1923, and October 1, 1927.—J. E. **Little**. "I think I would call this *S. caprea* × *viminalis* on account of the dense tomentum of grey hairs on the under surface of the leaves, and the prominent, arching, lateral nerves, covered with grey hair; or might adopt E. F. Linton's alternative name of *S. caprea* × *cinerea* × *viminalis*, probably on account of the small size of the leaves. These, however, are very liable to get much reduced on old plants.—**Fraser.**

Salix repens L., f. *incubacea* (L.). [Ref. Nos. 655 ♂ and 656 ♀.] Rosehearty, N. Aberdeen, May 27 and August 25, 1927. In wet hollows, and also growing over large boulders of greenstone cropping out of the soil. There are only six of the male though more might have been gathered. The f. *incubacea* (L.) appears to be a maritime one, judging from Sir J. E. Smith's remarks and my experience, and is characterised by the glabrous or subglabrous upper surface of the leaves and the copious raised reticulation when dry.—J. **Fraser.**

Populus tremula L., var. *Brownii* Druce in *Rep. B.E.C.* 36, 1926. The prevailing form on Tiptree Heath, N. Essex, June 9, 1927.—G. C. **Brown.**

Orchis incarnata L., var. *dunensis* Dr. Kenfig dunes, Glamorgan, June 1927.—G. C. **Druce.**

Allium triquetrum L. Grouville, Jersey, May 25, 1926; coll. by Bro. **Ariste**. Banks and hedges, roadsides; perhaps native.—L. **Arsene.**

Allium oleraceum L. Near Bulwell, Notts, August 11, 1927.—R. **Bulley.**

Muscari racemosum (L.) Mill. Introduced in several places. Sands of La Rocque, April 29, 1927; coll. by Bro. **Ariste**; comm. L. **Arsene.** There is a doubt about Miller's plant; it is more correctly of Lam. & DC. —G. C. **Druce.**

Juncus bifonius L. [Ref. No. Y.132.] The very dwarf form mentioned by Marquand. Morlin Hill, Guernsey, January 1927.—J. E. **Lousley.**

Juncus tenuis Willd. By the Hut at Wisley, Surrey, August 1927. —J. E. **Lousley.**

Potamogeton obtusifolius M. & K. Witley Common, Surrey, July 1927.—W. Biddiscombe.

Carex leporina L., var. *bracteata* Syme. Milford, Surrey, July 21, 1927. It seems worth noting the points about this strongly marked variety. (1) I found it two years previously in the same locality; probably therefore it is constant there. (2) The characters which mark it seem to affect the whole of a clump of the sedge; there were, as far as I could see, no mixed plants (*i.e.*, bearing spikes of both variety and type) and no intermediates. (3) Clumps of type and of the variety grew side by side, and therefore the degree of wet or dryness does not seem to be a cause of this variety.—I. A. Williams. " *C. leporina* L., var. *bracteata* Sonder Fl. Hamb."—Bennett.

Panicum sanguinale L. Waste ground, Didcot, Berks, August 1927. —G. C. Druce. " Yes, under section *Digitaria* (Heister)."—Howarth.

Panicum sp. Waste ground, Yiewsley, Middlesex, September 24, 1927; coll. J. E. Cooper.—G. C. Brown. " *Setaria italica* Beauv."—Druce. " Offers some difficulties but I should place it under *Setaria viridis* P. B., var. *brevisetum* Doell."—Howarth.

Setaria italica P. B. Waste ground near Rainham, Essex, September 2, 1927.—R. Melville. " Yes, var. *longisetum* Doell."—Howarth. " *S. italica*."—Druce.

Phalaris minor Retz. (In different states.) Vale Parish, Guernsey, August 1912. Though all growing in the same neighbourhood, I believe the range in size is not genetic but entirely due to immediate local conditions of nutrition.—C. V. B. Marquand. " Yes."—Howarth.

Anthoxanthum odoratum L. Quarries, near Groeanyed, Denbighshire, N. Wales, May 25, 1927.—C. Waterfall. " Yes."—Howarth. " Var. *villosum* Lois."—Britton.

Anthoxanthum Puellii Lec. & Lam. Waste ground, Dagenham, Essex, August 4, 1927.—R. Melville. " =*A. aristatum* Boiss."—Howarth.

Cynodon Dactylon (L.) Pers. Grève de Lecq, Jersey, August 28, 1926. Very likely introduced in Jersey though it is native in Brittany. —L. Arsene. " Yes."—Howarth.

Phragmites communis Trin. (with small panicles). Gerrans Bay, Cornwall, September 19, 1913, leg. E. Thurston.—F. Rilstone. "Yes." —Howarth. " I think this comes as *Phragmites Phragmites* (L.) Karst., var. *flavescens* (Custer)."—Druce.

Cynosurus echinatus L. [Ref. No. Y.146.] Gravel pit on Worms Heath, Surrey, June 19, 1927.—J. E. Lousley. " Yes."—Howarth.

Molinia caerulea Moench, var. *depauperata* (Lindl.). Boggy bank, Conglass Valley, Tomintoul, Banff, July 15, 1909; coll. W. A. SHOOLBRED. —NAT. MUSEUM OF WALES. "Yes."—HOWARTH. "This does not agree with Lindley's description (*Synopsis* 307, 1829) since he says 'leaves much longer than panicle; panicle thin, few-flowered, colourless; glumes very unequal, 1-flowered; lower palea acuminate, obtuse, 5-ribbed.' Here the panicles are much longer than the leaves, and the lower pales have 3 ribs."—DRUCE.

Poa pratensis L., var. *subcaerulea* Sm. [Ref. No. Y.106.] Wall by Cauldron Snout, Teesdale, Westmorland, July 1927.—J. E. LOUSLEY. "Yes."—HOWARTH. "Smith described it as a species, which Lindman says is a grade it well deserves."—DRUCE.

Poa compressa L. Thrumpton, Notts, August 27, 1927.—R. BULLEY. "Yes."—HOWARTH.

Festuca rigida Kunth. Nuttall, Notts, August 19, 1927.—R. BULLEY. "Yes."—HOWARTH. "I agree."—SALMON.

Festuca capillata Lam. [Ref. No. Y.117.] Old wall by Cauldron Snout, Upper Teesdale, Westmorland, July 1927.—J. E. LOUSLEY. "Yes."—HOWARTH.

Festuca sp. [Ref. No. Y.116.] Slopes of Mickle Fell, near summit, Westmorland side, alt. c. 2000 feet, July 1927.—J. E. LOUSLEY. "=*F. capillata* Lam."—HOWARTH.

Festuca uniglumis Soland. Maritime sands and dunes, St Ouen's Bay, Jersey, June 5, 1926.—L. ARSENE. "Yes."—HOWARTH.

Festuca Danthonii A. & G. (*F. ciliata* Danth.). Burton, Staffs, July 1927.—G. C. DRUCE. "Yes."—HOWARTH.

Festuca bromoides L. Frilford, Berks, June 1927.—G. C. DRUCE. "=*F. dertonensis* Asch. & Graeb."—HOWARTH. "There seems no adequate reason for rejecting the Linnean name."—DRUCE.

Festuca Myuros L. Walls, Garford, Berks, July 1927.—G. C. DRUCE. "Yes."—HOWARTH.

Festuca Myuros L. Rubbish heap near Bramley, Essex, June 26, 1927. I send these specimens to show that the character of "uppermost sheath reaching or partially covering the panicle" does not hold good when the plants grow old. There is then a considerable gap between the sheath and the bottom of the panicle. These particular specimens were growing in rich soil, but I observed the same thing in plants growing on almost pure sand at Thursley not far away.—I. A. WILLIAMS. "This form deserves further investigation by cultivation under observation." —HOWARTH.

Bromus sp. [Ref. No. Y.144.] Edenbridge, Kent, June 19, 1927. —J. E. Lousley. "Why not *B. racemosus* L.?"—Britton. "*B. racemosus* L."—Howarth.

Bromus commutatus Schrad. [Ref. No. Y.140.] Field near the River Eden, Edenbridge, Kent, June 19, 1927; leg. J. E. Lousley and F. A. Swain.—J. E. Lousley. "Yes."—Howarth. "Yes, the earlier name is *B. pratensis* Ehrh."—Druce.

Agropyron repens Beauv., var. *caesium* Bolle. [Ref. No. 3219.] Merton, Surrey, July 24, 1927. See *Rep. B.E.C.* 37, 1926. The plant distributed is a shade-grown form, with the characteristic glaucous feature not well-developed. It, however, well displays the hairy leaf-sheaths.—C. E. Britton. "Yes."—Howarth. "*A. repens* with the lower sheaths hairy. Mr Britton drew attention to a similar plant in *Journ. Bot.*, December 1926, but he does not there mention the particular authority stated, although he states that the plant has many synonyms and quotes four of them."—Lousley.

Triticum triunciale Rasp. Splott, Cardiff, June, 1926. Introduced with grain refuse.—R. L. Smith. "My specimens are *T. ventricosum* Ces. (*Œgilops ventricosa* Tausch)."—Lester-Garland. "Not this but *T. ventricosum* Ces. Pass. et Gib. = *Œgilops ventricosa* Tausch."—Britton. "I should place under *T. ventricosum* Ces."—Howarth.

Hordeum hexastichon L. [Ref. No. 2417.] Waste ground by maltings, Hythe Quay, Colchester, August 28 and September 3, 1927.—G. C. Brown. "Yes."—Howarth.

Equisetum arvense L., var. *nemorosum* Braun. Hedgerow, Chase Hill, Wickwar, W. Gloster, July 20, 1927.—I. M. Roper.

Equisetum pratense Ehrh. [Ref. No. Y.52.] Abundant on banks of Harwood Beck, Upper Teesdale, Durham, July 1927.—J. E. Lousley.

Equisetum hyemale L. Railway bank, Cardiff, Glamorgan, June 1927.—G. C. Druce.

Lastrea filix-mas Presl (Mountain form). [Ref. No. 1.] Cliffs at 1800 feet, near Pistyll Rhaiadr, Denbighshire, July 29, 1927.—A. Wilson. "=*Dryopteris Filix-mas.*"—Druce.

Cystopteris fragilis Bernh. Rocks by River Avon, Tomintoul, Banff, July 17, 1905; coll. W. A. Shoolbred.—Nat. Museum of Wales.

Hymenophyllum peltatum Desv. Damp rocks, wood by stream, Capel Curig, Carnarvonshire, July 11, 1912; coll. W. A. Shoolbred.—Nat. Museum of Wales.

Pilularia globulifera L. Pint Mere, Walton, Surrey, May 29, 1927. —J. E. LOUSLEY.

Selaginella Kraussiana A. Br.? Established on roadside hedge, Porthpean, E. Cornwall, June 1927; leg. W. TRESIDDER.—F. RILSTONE.

Chara vulgaris (L.). ? Pool near River Thames (probably brackish), near Grays, Essex, October 29, 1927.—I. A. WILLIAMS. "Yes, quite an ordinary form of this polymorphous species."—GROVES.

Packets of seeds and fruits contributed by Mr J. E. Little:—*Radicula palustris* Moench, *Arenaria leptoclados* Guss., *Chrysanthemum segetum* L., *Matricaria Chamomilla* L., *Verbascum Thapsus* L., *V. Lychnitis* L., *Atriplex hastata* L., *Carpinus Betulus* L., and *Orchis incarnata* L.

American plants contributed by Professor F. S. Beattie:—*Hypericum mutilum* L., *Desmodium grandiflorum* (Walt.) DC., *D. nodiflorum* (L.) DC., *Prunus virginiana* L., *Poterium canadense* (L.) Gray, *Epilobium coloratum*, *Sanicula marilandica* L., *Solidago bicolor* L., *Euthamia (Solidago) caroliniana* (L.) Greene, *Aster vimineus* Lam., *A. patens* Ait., *A. divaricata* L., *Ionactis (Aster) linariifolius* Greene, *Hieracium paniculatum* R., *Lobelia inflata* L., *Gaylussacia caroliniensis* (Wanz) Koch, *Rhodora canadensis* L., *Pyrola elliptica* Nutt., *Gentiana clausa* Raff, *Gerardia tenuifolia* Vahl, *Lycopus americanus* Mull., *Polygonella articulata*, *Myrica caroliniensis* Mill., *Cypripedium acaule* Ait., *Polygonatum biflorum* (Walt.) Ell., *Cenchrus carolieniensis* Walt., *Pteritis nodulosa* (Michx.) Nieuwl.

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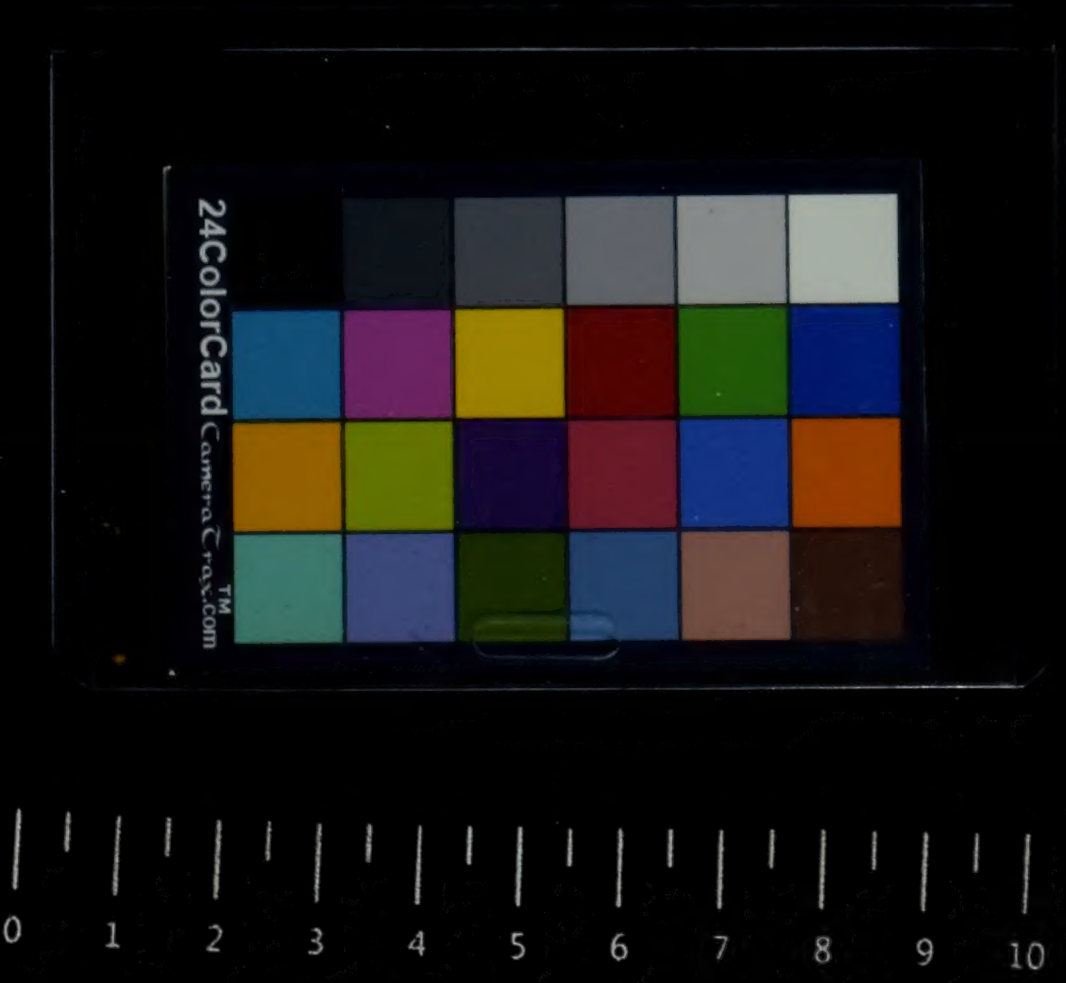
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